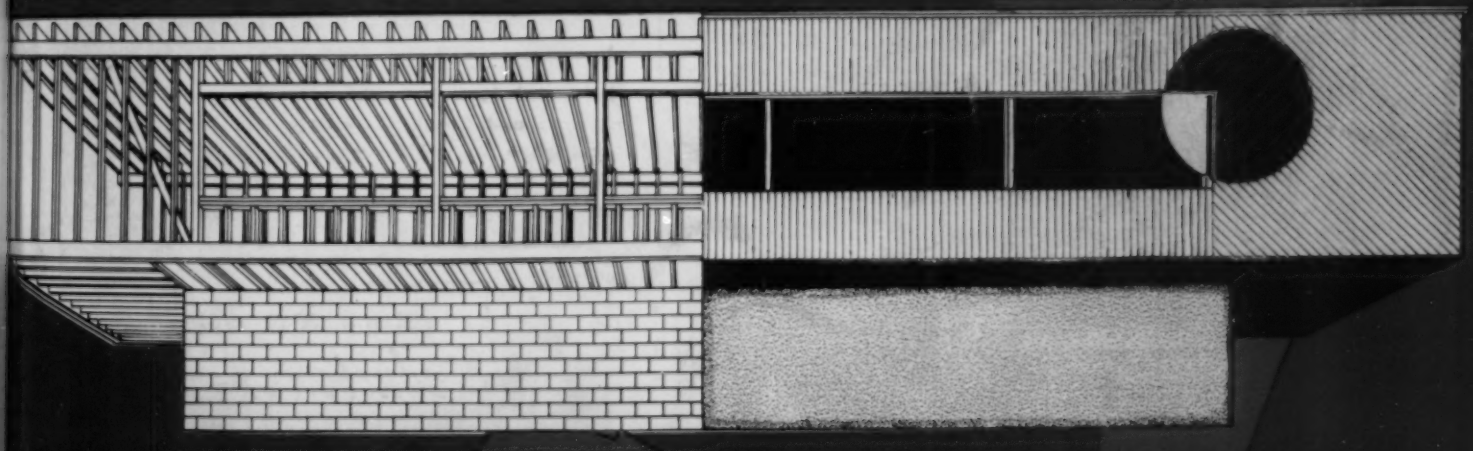
ARCHITECTURAL RECORD

HOUSE IN CONNECTICUT



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OCTOBER 1948

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ARCHITECTURAL RECORD

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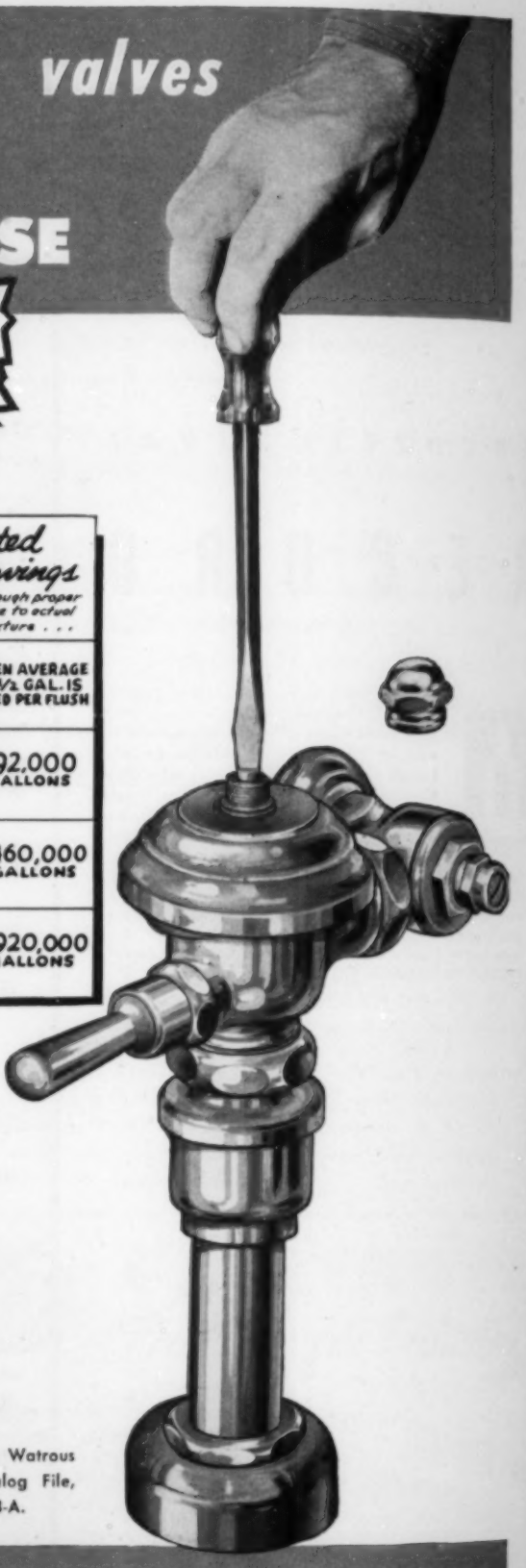
When specifying flush valves
SEE HOW IT PAYS TO ADD THIS PHRASE



"Flush valves shall have an external adjustment for length of flush."

Here are three of many big benefits and savings your clients get when you specify flush valves that are adjustable:

1. FIXTURES OPERATE MORE EFFICIENTLY

Since fixtures differ in their water requirements, *only* with adjustable flush valves can the exact coordination of fixture and flush be obtained to get top operating efficiency.

2. SAVE MORE WATER

By delivering only the amount of water required for the fixture on which it is installed, an adjustable flush valve often saves an extra half gallon or more of water on each flush. The chart shows the surprising amount of water, and money, which can be saved.

3. EFFICIENCY MAINTAINED EVEN AFTER YEARS OF SERVICE

Over the years normal wear and foreign material in the water are bound to change operating conditions. When flush valves are adjustable, compensation for these changes can be readily made to maintain maximum operating efficiency.

Estimated Annual Savings

of water obtainable through proper regulation of flush valve to actual water needs of the fixture . . .

BUILDING WITH	WHEN AVERAGE OF ½ GAL. IS SAVED PER FLUSH
100 FLUSH VALVES	292,000 GALLONS
500 FLUSH VALVES	1,460,000 GALLONS
1000 FLUSH VALVES	2,920,000 GALLONS

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THE RECORD REPORTS

Credit Controls Launched • Housing Picture Surveyed by HHFA • Research Program Described FSA Outlines Huge Hospital Building Plan

As pre-election uncertainty nears its end in the federal agencies and a more considered appraisal of the housing outlook, in view of the mid-summer enactment by Congress, becomes possible, two prospects stand out: (1) benefits of the new law will be felt most next year and after, not this year; (2) the old fight over public housing will arise again in the 81st Congress.

A number of factors point to the slowness with which the "Housing Act of 1948" can take effect. For one thing, it did not become law until August 10; for another, there was a necessary lag for the issuance by the Housing Administrator of rules and regulations to put the Act into operation; again, its stimulus to builders comes mainly in the fourth quarter when building activity seasonally falls off; still more, the Act functions chiefly through insurance or guarantee of mortgages.

Because of the importance of this new law to future operations, the ARCHITECTURAL RECORD presents a tabulated summary of contents for permanent reference (see page 10).

Omission from the measure of additional provisions sought by President Truman means renewed attempts to get this type of legislation next year, including low-rent public housing, slum clearance and urban redevelopment, and special aids for farm housing. There may be efforts, too, to broaden the HHFA technical research and study program, which was set up under the new law to apply only to standardizing of building codes, dimensions and methods for assembly.

New Credit Controls Launched

Late in September, as a result of the August enactment of limited credit controls, the Federal Reserve Board began the regulation of consumer installment credit. From the standpoint of construction this Regulation W is notable chiefly for its exemption rather than inclusion of housing credit, except where items under control are used. The Board specifically exempts real estate and home improvement loans, but in this language:

"Any extension of credit which is for the purpose of financing or refinancing (1) the construction or purchase of an entire residential building or other entire structure or (2) repairs, alterations, or improvements upon urban, suburban or rural real property in connection with existing structures, *except* to the extent that such repairs, alterations, or improvements incorporate any listed article."

Note that among listed articles are household cooking stoves, refrigerators, combination units including either of these, and room unit air conditioners.

Secondary Mortgages Provided

Once the Congress had finished with its housing labors early in August, including amendment of the June secondary mortgage market enactment, the Reconstruction Finance Corporation announced arrangements whereby its subsidiary, the Federal National Mortgage Association, would provide a secondary market for G.I. real estate mortgages.

Purchase will be made of mortgages guaranteed under the Servicemen's Readjustment Act of 1944, as amended, but only those which have been guaranteed after April 30, 1948. All mortgages, except farm realty, must provide for monthly payments, must bear interest at 4 per cent or more and must mature within 25 years. In the case of farm realty, installments must be payable at least annually. The Association will not purchase a second mortgage unless the FHA-insured first mortgage on the same property is also offered for purchase or is owned by the Association.

Steel Allocations Mount

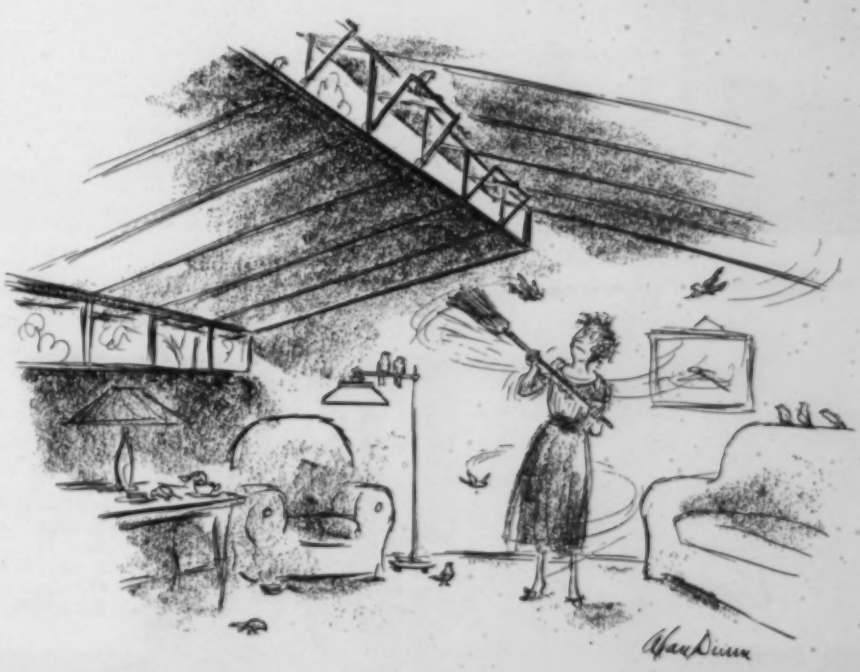
In the closing days of summer and into the early fall, the program for allocation of steel and other commodities gained momentum under the Department of Commerce. With the big defense program authorized and with the military granted the power to force filling of its contracts — i.e., meeting of its requirements — business and industry began to feel it necessary to get a statement of their individual requirements on record under the voluntary allocation program.

In addition to earlier actions in the field of housing, the Commerce Department announced its approval of a plan to allocate 59,000 tons of steel sheet and strip for factory-made steel houses. In response to conflicting views regarding this allocation, Secretary of Commerce Sawyer advised publicly:

"This allocation has been criticized because one of the companies which will presumably obtain some of the steel has received a large loan from the Reconstruction Finance Corporation. The loan itself also has been criticized. This fact does not in any way affect my decision. It is not the function of this Department to determine whether or not RFC loans are wisely made. Nor is any company entitled to the slightest preference because it is operating with government funds. . . .

"This steel will not go to one com-

(*Continued on page 10*)



—Drawn for the RECORD by Alan Dunn

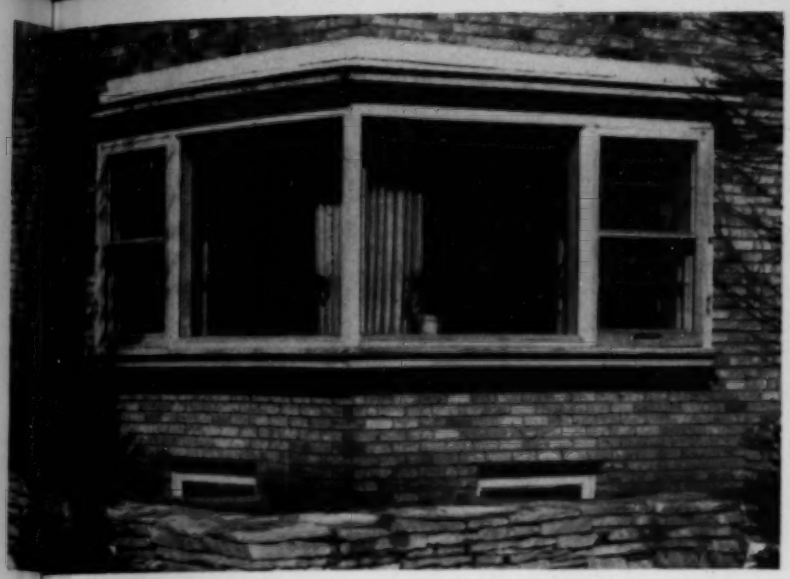
Recent, attractive glass

THERE ARE NUMEROUS WAYS that Pittsburgh Mirrors can be used to enhance the attractiveness of interiors. Above, a structural mirror over a fireplace. Other popular applications are over dining room buffets; on bedroom and dressing room doors, over tub recesses in bathrooms. Pittsburgh Mirrors are made from blue, flesh tinted or green Plate Glass, polished Plate Glass and with silver, gold or gunmetal backing. Architect: Harold L. Schwartz, New Kensington, Pa.

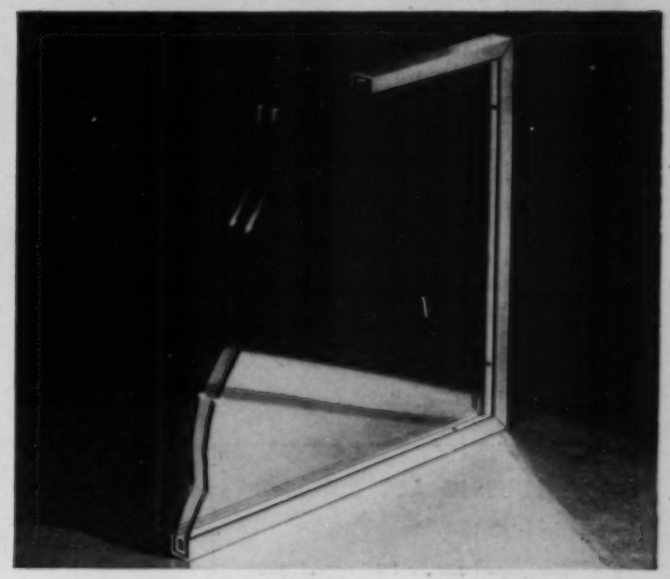
• • •

IF CLIENTS WERE ASKED to name the one best material for bathroom or kitchen walls, they'd probably select Carrara Structural Glass. A reflective polished glass, Carrara is easy to clean. And it is impervious to moisture and chemicals. Available in 10 attractive colors. Architect: Paul Lewin, Chicago, Illinois.

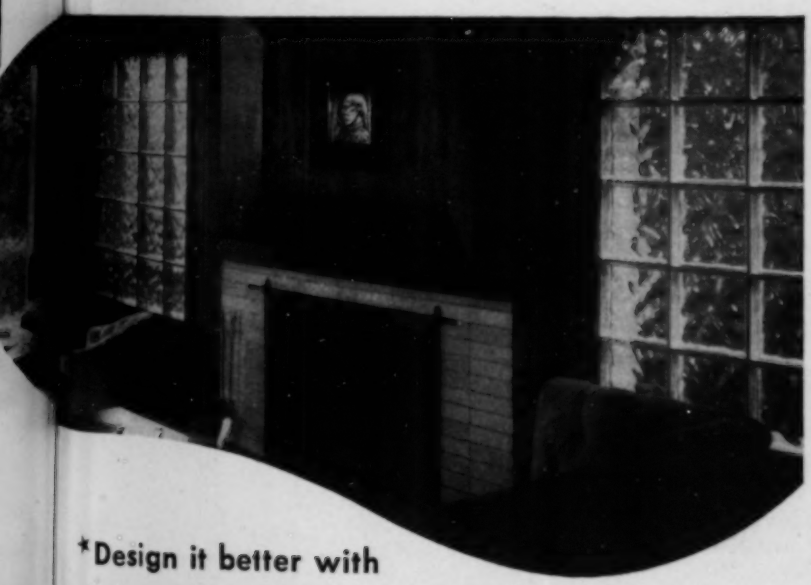
ass applications in residential buildings



PICTURE WINDOWS are more practical than ever now—thanks to Twindow—the "Pittsburgh" window with built-in insulation. For downdrafts near windows are minimized. Heatings costs are lowered. And windows seldom get "steamy." Twindow consists of two or more panes of Pittsburgh Glass separated by hermetically sealed air spaces, and enclosed in a protecting frame of stainless steel. Insulating effectiveness is increased as additional panes of glass with corresponding air spaces are added.



HERE'S THE SECRET of Twindow's insulating effectiveness. Two or more panes of Pittsburgh Glass separated by hermetically sealed air spaces. Entire unit is enclosed in a protecting frame of stainless steel.



AN AMPLE AMOUNT of well-diffused daylight is admitted into this living room through the two panels of attractive Pittsburgh Corning Glass Blocks. The blocks can be used effectively to dampen outside noises—cut off unattractive views. And their insulating properties cut heating costs. 10 patterns to select from. Designer: Joseph J. Tarantino, Cleveland, Ohio.

* * *

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THE RECORD REPORTS

(*Continued from page 7*)

pany alone, but to at least six producers of factory-made steel houses, and it is hoped that each of the companies involved may be able to give adequate demonstration of the utility of its particular type of house."

Steps got under way also to provide galvanized steel sheets to manufacturers of rain-carrying equipment (pipe, trough and accessories). Other voluntary plans under consideration for steel allocations include low pressure steel boilers, steel stairs, electric service entrance equipment, steel doors and steel baseboard radiation. As this was written, the voluntary plan for warm air heating was already in operation and the pig

(*Continued on page 12*)

HOUSING ACT DIGEST

Title I:

Mortgage insurance total upped $800 million.

No discrimination allowed against tenants with children.

Cost limit on rental projects changed from $1500 per room to $81 per family unit.

Mortgage coverage boosted to 90 per cent up to $7000; 80 per cent up to $11,000.

Loans to co-ops 90 per cent of mortgages; in case of vet co-ops 95 per cent.

On-site fabrication insurance 80 per cent of value not to exceed $6000.

$3000 limit on Class 3 raised to $4500; multi-family modernization loans upped to $10,000 per structure.

$50 million RFC loans for prefab and large-scale site construction authorized.

VA interest limit upped to 4.5 per cent.

Title II:

Secondary mortgage market for FHA and VA loans.

Title III:

Research to develop standardized building codes and materials.

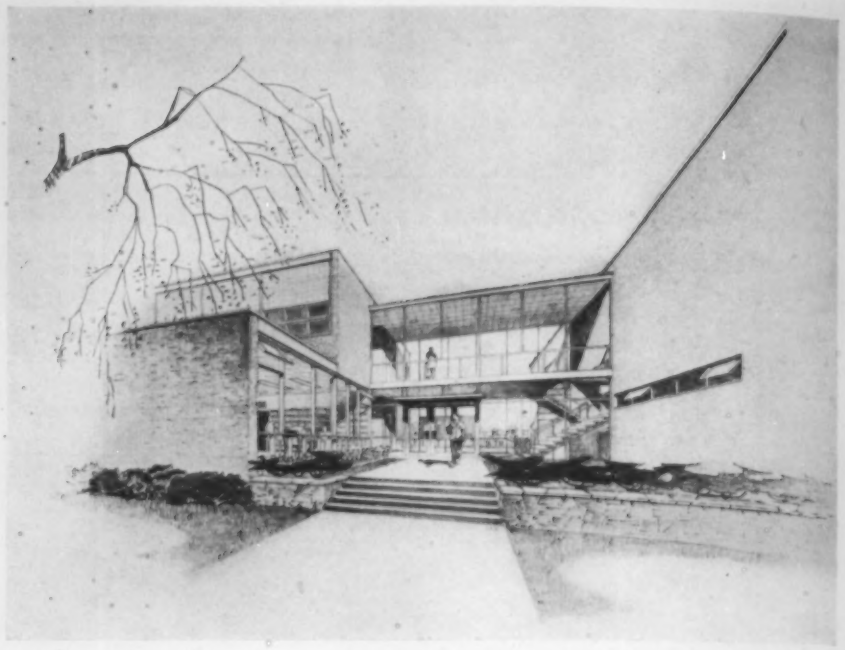
Title IV:

Yield insurance for rental housing for families of moderate income.

Title V:

HHFA Chief's salary increased to $16,500; HLBB members and FHA and PHA commissioners to $15,000.

Provision for converting state public housing into federal public housing.



Proposed two-story brick Oshawa High School, John B. Parkin Associates of Toronto, architects, features a 20-ft. glass neck joining the auditorium-gymnasium to classrooms

NEWS FROM CANADA

By John Caulfield Smith

Operation St. Lawrence

A unique opportunity will be given architects and town planners if the St. Lawrence River is backed up to provide a power-head. The proposal is made in connection with a great new hydro-electric development planned by the province of Ontario and the state of New York. In Ontario 16,000 acres of land will be flooded and 8000 people will have to move. New communities, highways and railways will have to be built on higher ground.

The project will shortly go before the International Joint Commission for consideration. If approved, the stage will be set for construction of a 2,200,000 h.p. plant on the Long Sault rapids near Cornwall. It is estimated that work will be provided for 12,000 men for from eight to ten years. The cost will be about $428 million, equally shared by Ontario and New York. Each will get half the power developed.

If it goes ahead, the proposed power development will be the greatest ever undertaken on the North American continent with the exception of Grand Coulee on the Columbia River.

Building Accelerator Jams

Construction awards for the first seven months of 1948 register a 43 per cent gain over the corresponding period last year. But this fine showing is made at the expense of the big boosts in volume that took place this spring. Figures for July, 1948, exceed those for July, 1947, by only 24 per cent — indeed, dip 33 per cent below those for June, 1948. Comparing July with June, all entries in the contract ledger are down: housing 6 per cent, commercial and institutional building 13 per cent, factories 30 per cent, and engineering works a staggering 64 per cent. (Data supplied by MacLean Building Reports.)

Nail Distribution Starts

Temporarily, Central Mortgage and Housing Corporation has gone into the nail business. It has been given responsibility for distributing the nails produced as a result of the Dominion Government's action in diverting steel rod from the manufacture of barbed and other types of wire (ARCHITECTURAL RECORD, July, 1948).

The Corporation points out that the intention is not to meet the total requirements of any individual, but to

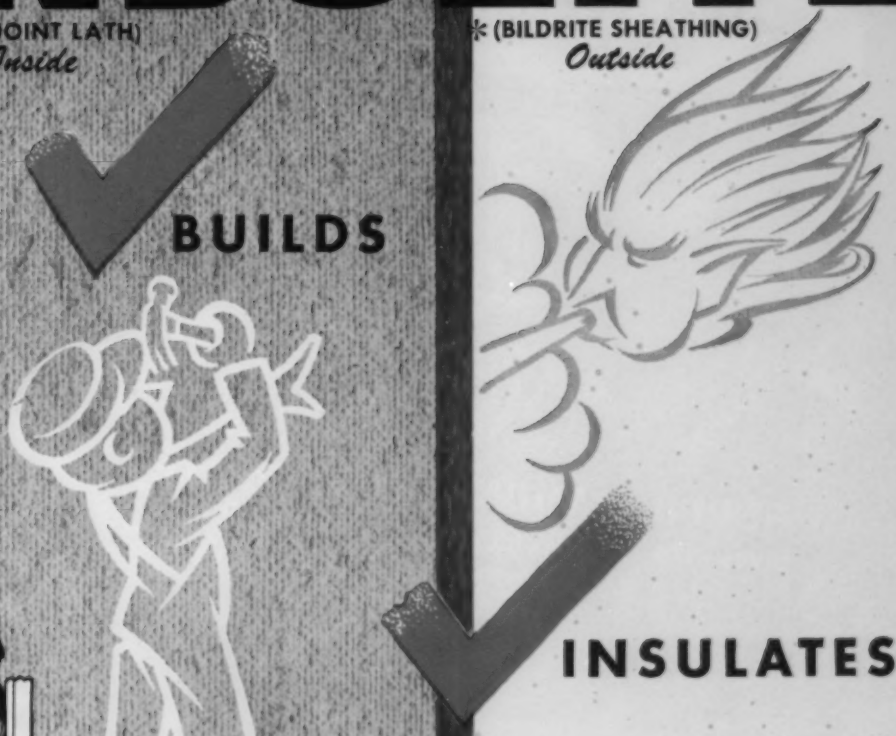
(*Continued on page 186*)

Architects Abra, Balharrie and Shore plan complete facilities for 475 in the Ottawa United Church now under construction

DOUBLE DUTY
INSULITE

*(LOK-JOINT LATH) *Inside*

*(BILDRITE SHEATHING) *Outside*



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Refer to Sweet's File, Architectural Section 10a/9

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THE RECORD REPORTS

(*Continued from page 10*)

iron program for residential housing was to provide 114,000 tons monthly for a long list of items.

Current Trends Cited

The Bureau of Labor Statistics points out among current trends in construction that the rise in new residential building above earlier estimates reflects an unexpected predominance of higher-priced housing over homes for moderate- and low-income families. It anticipates that dollar volume of new construction for the year will be nearly 30 per cent over 1947 and that physical volume will approximate 15 per cent more than last year.

The Bureau has made an interesting analysis of the postwar trend toward suburban living. Taking six large industrial areas, it shows the percentage distribution of housing authorized. In each area there was a substantial rise between 1946 and 1947 in suburban home building. On the other hand, building within the central cities declined in New York, and in Atlanta and San Francisco, rose only moderately in other areas. In suburban New York home building doubled between 1946 and 1947; in Washington, D. C., it nearly doubled compared with a 37 per cent rise within the city.

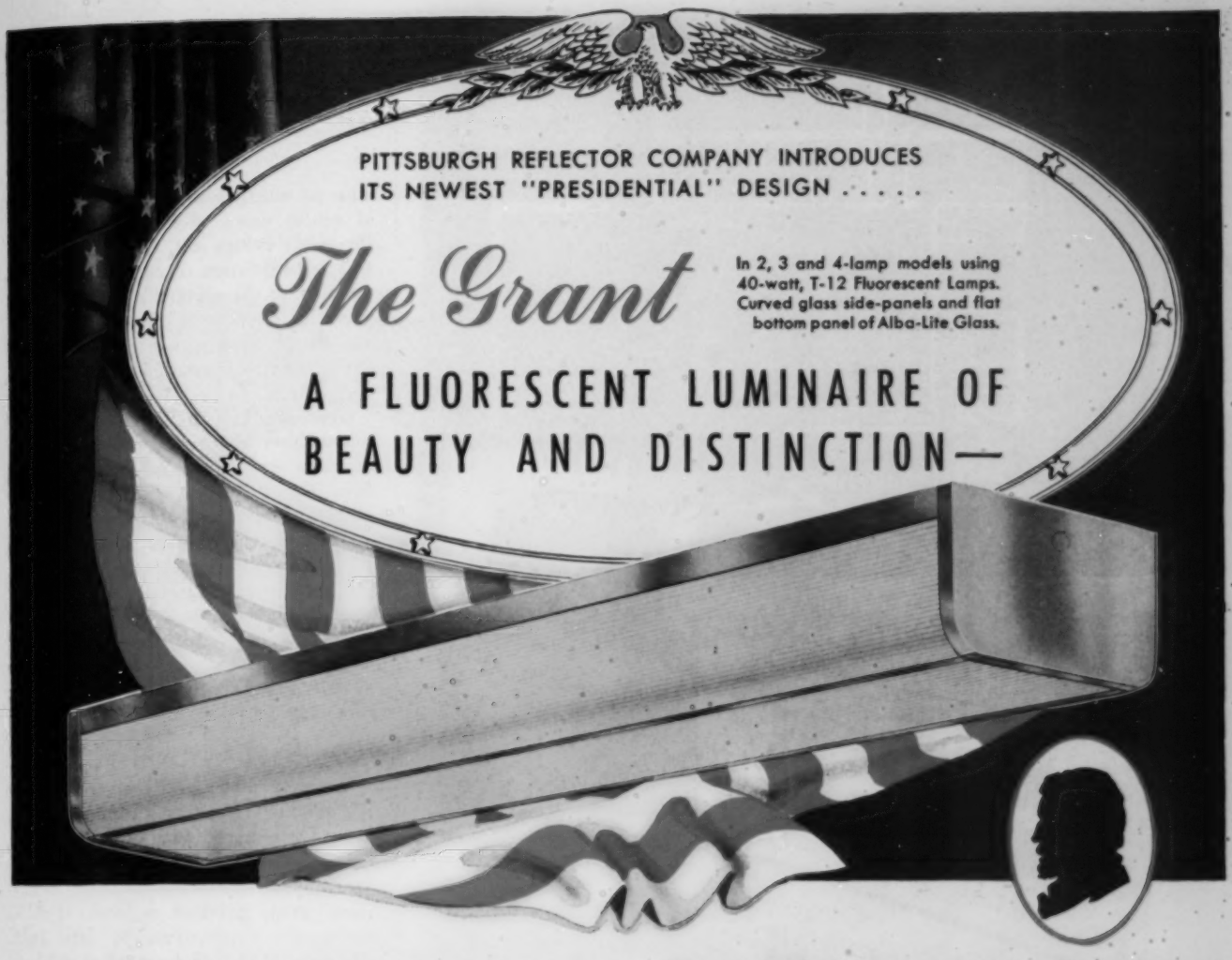
Here are the percentage distribution figures for the six industrial areas: Atlanta — city 19 per cent, remainder of area 81 per cent; Los Angeles — city 36 per cent, remainder of area 64 per cent; New York-Newark-Jersey City — New York City 58 per cent, remainder of area 42 per cent; Philadelphia-Camden — central cities 38 per cent, remainder of area 62 per cent; San Francisco — central cities 26 per cent, remainder of area 74 per cent; Washington, D. C. — District of Columbia 24 per cent, remainder of area 76 per cent.

New Survey Made

A new survey of the general housing picture by the HHFA brings out the fact that there are roughly 42 million dwelling places in the United States ranging all the way from 40-room mansions down through one-room shacks. Reflecting a continuation of the trend away from the farms, the 34,133,000 non-farm dwellings in 1947 represented the highest proportion of such units in our history.

Reversing the gradual decline in home ownership in the first four decades of the century, dwellings owned by occupants jumped from 40 per cent in 1940 to 55 per cent in 1947. In this connection, HHFA mentions the federal insur-

(*Continued on page 14*)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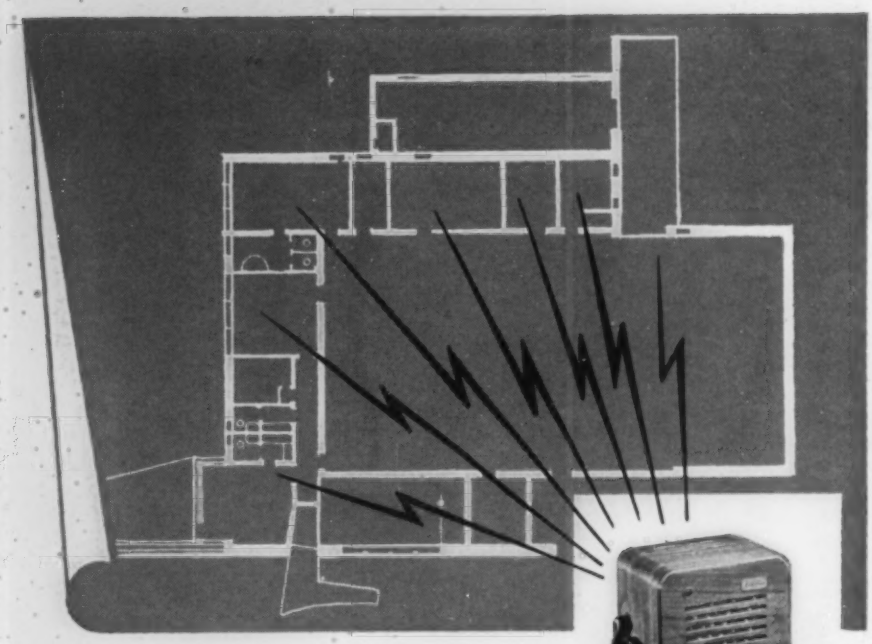

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Name_____ Title_____

THE RECORD REPORTS

(*Continued from page 12*)

ance of mortgages and the inadequacy of rental units. Wartime effects, too, the study brings out, stimulated repair and rehabilitation of run-down properties so that the number of units in good condition rose from 82 to 90 per cent and the number with private bath and flush toilet rose from 55 per cent to 66 per cent.

Other points brought out in the study: the number of married couples sharing quarters with other families has risen from the 1940 figure of 1,846,000 to 2,712,000, apparently a new high. The housing shortage remains extremely critical with only eight-tenths of one per cent of the non-farm dwelling supply actually on the market as of April, 1947. As of the same date only 11 per cent of America's homes lacked electricity where in 1940 21 per cent were deficient in that respect.

Flood Area Aided

More currently, HHFA reports that the Public Housing Administration, given the responsibility over emergency public housing in the Portland, Oregon-Vancouver, Washington flood devastated area, handled a total of 3135 emergency applications by late July. Of these 1644 had been filled, 957 remained unfilled, and the remainder had been withdrawn or cancelled. Three emergency projects were set up in addition to projects previously in this area.

PHA reported that on June 30 its total workload had dropped to 865,000 dwelling units compared to 928,000 the year before. The reduction came about chiefly through the disposal of public war and defense housing. A total of 390,000 dwelling units remained for disposal.

HHFA Will Tackle Codes

Of top importance to architects in the substantial volumes of rules and regulations emanating from agency sources during the summer were those dealing with creation of a new Division of Standardized Codes and Materials in the Housing and Home Finance Agency. HHFA itself called this "a limited research program" to develop and encourage the adoption of standardized and improved building codes and of standardized measurements of housing parts and materials.

To expand HHFA functions in those two general fields, Administrator Raymond M. Foley has named Leonard G. Haeger, head of the agency's technical division, to supervise the continuing

(*Continued on page 16*)

OTIS ADDS
a 'touch' of startling newness
TO SIGNAL CONTROL ELEVATORS

FOR THE PASSENGERS—it's a 'touch' of magic. It's the newest way to call an elevator. How? By simply *touching*, not pushing, a plastic arrow in the landing fixture. What happens? The electronic 'touch' button lights up. A soft-toned gong announces an approaching elevator as the overhead lantern lights up. The passenger steps toward the entrance, the doors open—and she's on her way. How's it done? With a magic brain—*the electronic panel in the control room*—as pictured below.

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For Every Reason You Can Think of . . . It's Wright Rubber Tile for Floors

Put *durability* at the top of your list — wear-tests of Wright Rubber Tile reveal a potential life of 100 or more years.

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For floors in restaurants, office buildings, stores and other large areas with excessively heavy traffic, specify WRIGHTFLOR, the hard-surface Wright Rubber Tile. See our nearest dealer or write Taylor Manufacturing Co., 3074 W. Meinecke Ave., Milwaukee 10, Wis. — America's oldest maker of Rubber Floor Tile.

WRIGHT RUBBER TILE

Floors of Distinction

THE RECORD REPORTS

(*Continued from page 14*)

effort. An industry advisory committee is being named to assist Haeger's staff. HHFA is prepared to call on other federal agencies liberally for the use of their available facilities in carrying out the new division's aims. These involve principally the stimulation of better and lower-cost housing construction. In its progress toward the announced goals the division is expected to work hand-in-glove with the National Bureau of Standards, the Department of Commerce and the Forest Products Laboratory of the U. S. Department of Agriculture. Watch for the addition of more sections within this new HHFA division. Specialists are being named in the fields of codes, materials and modular coordination, among others.

Concerning the areas of codes and building standards, the new housing law merely transports these HHFA efforts into a new division where they will be expanded and extended with new appropriations.

How Much Can HHFA Do?

A division of opinion already was becoming evident over possible achievements of this new HHFA responsibility. Many building material producers welcomed the new step as preliminary to a wider application of standardized measurements. These producers were happy over prospects of extending the standardizing principle to more and more construction items. And of course this point of view depended upon what type of business you were in. Over the matter of code standardization, however, the idea of persuading thousands of local communities to accept a similar overall pattern of building regulations, there was considerably less optimism.

Congress — at least its members who worked ardently on this subject of making all construction codes more or less out of the same cloth — envisioned great savings in home building costs through such a plan. These savings, it was estimated, can be made to run as high as 30 per cent under certain conditions.

But some building interests, while not contesting the desirability of uniform codes, appeared to be pessimistic about a national simplification of regulations. An instance of this doubtful attitude was the expression by the National Association of Real Estate Boards: "Less likely (than standardizing home building materials and equipment) was the prospect that government research could eliminate cumbersome building codes."

(*Continued on page 18*)

as announced in TIME.

"SKY-GLO" CONVERTS OLD CEILINGS INTO GLOWING NEW ONES!

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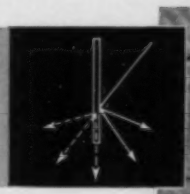
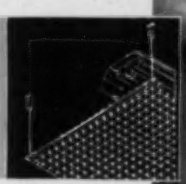


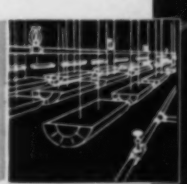
Unlike wood or metal "egg-crate" louvers, "Sky-Glo" not only reflects light but is translucent, having a light transmission factor of 71%. It is made of non-inflammable Vinylite, product of the Bakelite Corporation.

costs less



"Sky-Glo" is a system of channels, fittings and louvers of standardized sizes which makes it easy to fit a "Sky-Glo" ceiling to any size room. The simple, quickly assembled units reduce cost; actually "Sky-Glo" costs less than the usual conventional false ceiling.

hides ugliness



With "Sky-Glo" the usual overhead unsightliness, sprinkler heads, pipes, obsolete ceiling decorations and "forest" of conventional lighting units required to provide comparable levels of illumination are replaced by an ultra-modern, continuous sky of unobtrusive light.

know "Sky-Glo"

"Sky-Glo" heads a trend. Whether you use, specify or install lighting equipment you MUST know all about "Sky-Glo". For comprehensive "Sky-Glo" Data Manual write: Benjamin Electric Mfg. Co., Dept. Q-1, Des Plaines, Illinois

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Product of Benjamin Electric Mfg. Co., Des Plaines, Ill., The Nation's Largest Manufacturer of Lighting Equipment—Established 1901—Makers of a complete line of lighting equipment for Industrial, Commercial, Play Area and Utilitarian Requirements. Distributed Exclusively Through Electrical Wholesalers.

"Sky-Glo" creates a new epoch in lighting application! The most important development since the advent of fluorescent lighting...

"Sky-Glo" is not just another improvement in lighting equipment! *It is a wholly new way to use light!* No other single improvement can do as much to modernize an interior as "Sky-Glo". It replaces overhead unsightliness with a continuous sky of glareless, shadowless, pleasant and stimulating light. Its unique lighting advantages stem directly from the development and adaptation of Vinyl Chloride Acetate (a Bakelite Plastic) to the "Sky-Glo" Louver System. The use of these translucent louvers makes possible *"A New Experience in Seeing."*

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THE RECORD REPORTS

(*Continued from page 16*)

"Build for Health"

The recent report of the Federal Security Administrator, Oscar R. Ewing, to President Truman has again focused attention on what the Administration would like to see accomplished in the way of building for the nation's health and has injected the health program into the political campaigns.

From the standpoint of architectural and general construction activity the Ewing report has much in it, proposed in a nebulous sort of way. Attainment of its stated goals, placed on a 10 to 15 year basis, probably stands well in the future, but it raises again the question of need not only for hospital plant but for sanitation construction on a country-wide scale.

For one thing, the FSA Administrator urged that the number of acceptable hospital beds in civilian institutions be doubled as soon as possible, at least within 15 years. The addition of 600,000 beds by 1960 was recommended in addition to construction of health centers and auxiliary facilities shown necessary through state-by-state surveys. Ewing proposes beginning this expansion by doubling present building under the Hospital Construction Act of 1947 for the next three years. After that he would increase appropriations progressively until the required total, as outlined, is reached. This is an ambitious building program for civilian hospitals to say the least, but it does not end there.

Financing Plan Outlined

The report calls for accomplishment further by increasing in 1949 the percentage of the federal contributions (now one-third of estimated cost) and by encouraging the states to make their own contributions large enough "that impoverished areas, which also are the areas of greatest need, will be able to finance their smaller share of total costs." Still another supposition toward this suggested expanding program would involve partial federal financing of operation and maintenance. This would be started in 1949 so that inadequate income would no longer constitute a barrier to building hospitals in areas of greatest need.

When all this change in present modus operandi is calculated in terms of added expenditures, it comes to an annual outlay of $485 million for hospital construction by federal, state and local sources. The federal share would be somewhere between $200 million and $240 million of this, according to Administrator Ewing's figures. Federal grants-in-aid to

(*Continued on page 20*)

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in light and power distribution, more and more industrial plants are changing over to Plugin Busduct because . . .

It's More Flexible! Plugin Busduct provides a ready power source for new or old machinery anywhere along the line . . . and permits a quick change in plant layout without disrupting production.

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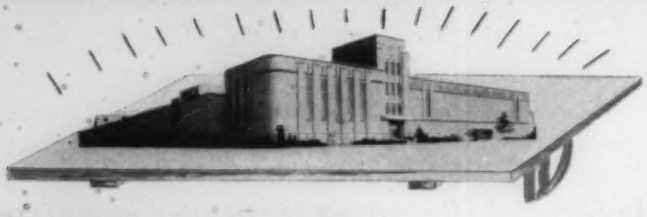
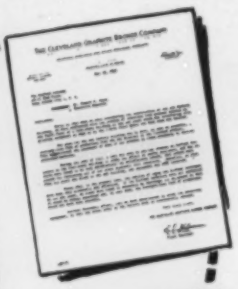
TO THE *ENGINEER* ...WITH AN INDUSTRIAL PLANT ON HIS DRAWING BOARD



HERE'S AN IDEA... For STRAIGHT-LINE PRODUCTION LAYOUT



Korfund Vibration Control for over 200 presses made possible Straight-Line production — and Cleveland Graphite Bronze Co. received Cleveland's Chamber of Commerce award as "The finest large industrial plant constructed in Cuyahoga County in 1941-42."

Early in 1940, when we were considering the construction of our new factory building, we were confronted with the problem of vibration from presses located on the first floor of a four-story building at the old plant which was interfering with grinding equipment as high up as the fourth floor, where the tool room was located.

Our plan for the new factory building was to have, as near as possible, a straight-line flow of production from the raw material to the finished product. This necessitated the placement of some of our presses in close proximity to various precision machines.

During the year of 1940, a test was made by placing presses on Korfund Isolators in the four-story building to study the effect on nearby equipment, and the results were found to be very satisfactory—so satisfactory indeed, that orders were placed for furnishing all of our press equipment with isolators. Therefore, in 1942, when our plant was moved to the new building, our equipment was 100% isolated.

Since 1942, to the present time, the results of using the Korfund Isolators have been very successful and effective. If the Korfund Isolators were not installed in our new plant, we would have found it necessary to rearrange our equipment so that it would be widely separated and, in that case, the straight-line flow of production would not have been possible.

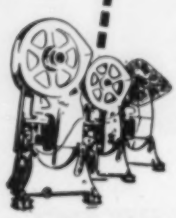
Another favorable effect that we have experienced in using the isolating equipment, is that the noise level in the factory area is considerably reduced.

Very truly yours,

THE CLEVELAND GRAPHITE BRONZE COMPANY

(Signed) L. E. Wilson, Plant Engineer

May 18, 1948



KORFUND VIBRATION CONDITIONING reduces building damage, machinery maintenance costs, work spoilage, and provides the more quiet atmosphere that increases employee efficiency.

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THE RECORD REPORTS

(*Continued from page 18*)

states should provide 40 per cent of maintenance costs in all types of hospitals, the report states.

Sanitation Needs Revealed

In the field of sanitation needs as expressed in a nation-wide inventory, the contemplated expenditures go into the billions. FSA says that on the basis of this survey, recently completed, the full needs of the country with regard to sanitation are now known accurately for the first time. Based on present prices and costs, complete protection in every state where needed would cost $7.7 billion — $2.2 billion for water works, $3.7 billion for sewage disposal, $166 million for garbage disposal facilities, and $1.6 billion for all types of sanitation facilities for rural homes including septic tanks and pure water sources.

There were some startling discoveries made in the state-by-state survey made over a two-year period. This FSA inventory revealed that over two million people in 5700 communities of over 200 population have no public water supply system; 79 million in 15,000 towns and cities have systems needing extension or improvements. The report continues: in rural communities, only 12 million persons are adequately served; 27 million need new or improved water supply systems.

Other tabulated needs:

Complete sewerage systems for 9000 towns and cities with a total population of six million;

Improved sewerage systems for nearly 10,000 cities and towns with almost 80 million;

New or improved systems for 33 million homes.

Pollution Control Planned

Architects will benefit by the first legislative step toward satisfying these demands — the passage of Public Law 845 by the 80th Congress providing loans of $22.5 million a year for five years. These will go toward construction of treatment plants to reduce pollution of rivers and streams. Much of the designing work, if not virtually all of it, is expected to go to private practicing architects and engineers.

The Act is described as "only a good beginning" by Ewing. He says that by 1960 loans and grants for elimination of water pollution, for garbage disposal and for rural sanitation should total around $400 million each year.

Nothing has been said of it publicly, but government officials are considering the pollution control program along

(*Continued on page 22*)

Draw your own Conclusions!

Check the Coupon and Check the Facts!

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✓ **NOTE** *the crisp, sharp prints.* Because you get blackness without thickness of lead deposit, there's a minimum of smudging and freedom from erasure-ghosts.

✓ **FEEL** *how smoothly VAN DYKE glides.* That's because VAN DYKE Microtomic Leads are made of pure crystalline graphite flakes – chemically reduced 100 times finer than is possible by old grinding methods.

✓ **TEST** *the stronger lead for longer wear.* A thermostatically controlled heat treatment produces extraordinary strength through the entire lead.

✓ **COMPARE** *the precision of grading.* Ninety-nine years of fine pencil making experience and the use of exacting formulae are your assurance of uniformity of lead in every degree.

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Send me FREE a _____ (degrees) regular lead or
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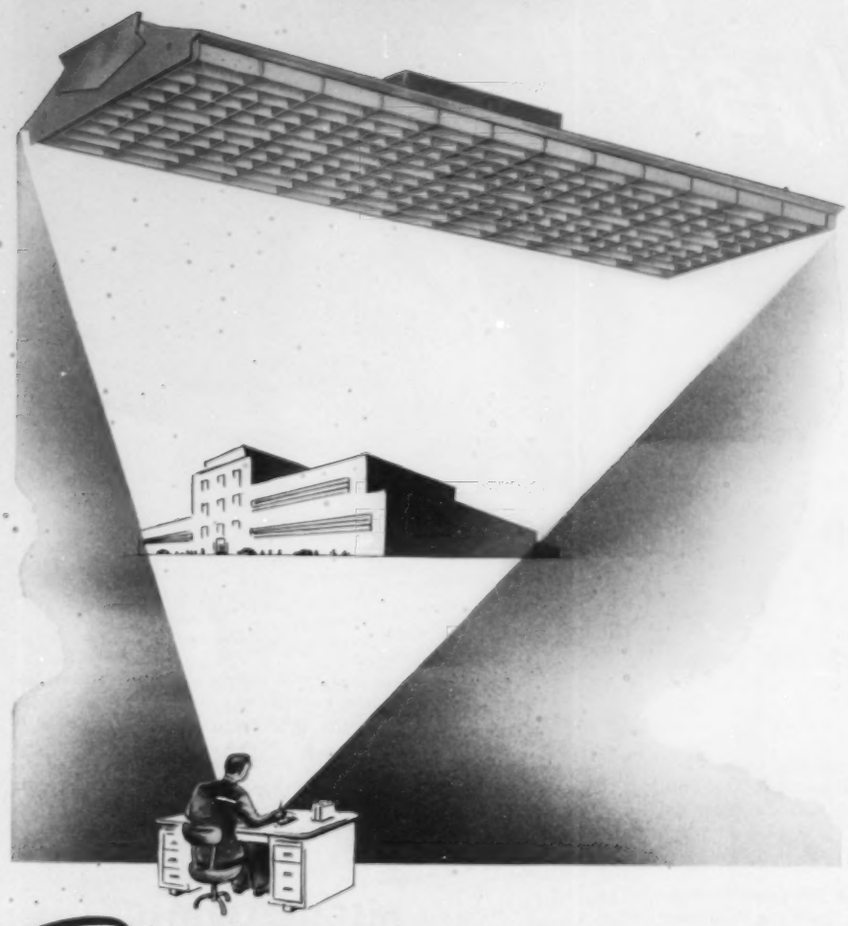

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THE RECORD REPORTS

(*Continued from page 20*)

with other public works undertakings that together could constitute a sizeable construction buffer against unemployment in event of economic recession. Top federal works officials say that more than $6 billion worth of public works construction should be wrapped up in prepared plans if it is to be effective in helping to neutralize a threatened depression. Plans had been completed on only $4.5 billion worth of public projects when the law governing such projects expired at the end of June, 1947. Actual construction on this type of work and completion of plans for contemplated jobs since that date have just about balanced, leaving some deficiency in the public works reserve; that is, in the shelf of completed plans and specifications awaiting construction.

VA Preparing Standards

As this was written, the Veterans Administration was readying its own minimum construction standards for new homes financed with loans guaranteed under the GI Bill of Rights. Long awaited by builders as an important step toward simplification of the government's red tape proceedings, the announcement nevertheless was a disappointment to those who thought VA standards should conform to those of the Federal Housing Administration.

Advance information on the VA plans told of minimum standards pertaining to construction only, eliminating any property or architectural criteria. Lenders and real estate interests as well as the architects themselves would favor a broader base, including property and architectural stipulations.

The story is that VA has felt its way in establishing any minimum building standards at all, fearing in the beginning that it did not possess sufficient authority from Congress to make the standards stick. They have been under discussion at top policy levels in the agency for over two years. Almost ready for announcement at the time General Omar N. Bradley turned over the VA reins to Carl R. Gray, Jr., the standards were held up until Gray himself could study the matter and make the final decision. In fact, Gen. Bradley had before him the day he left VA construction, property and architectural standards ready for issuance. He felt, however, that his successor should decide the issue, it being a high policy determination.

About 10 months have passed since that time, and only now have the minimum construction standards for VA come into the open.

(*Continued on page 24*)

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UNMISTAKABLE MARK OF QUALITY

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Housewives know that greater resilience means safer dishwashing — less hazard of breaking fine china.

Hot utensils can't mar the lustrous surface. Never a crack or craze from waste food disposer or automatic dishwasher action.

Will not chip, peel, flake or wear off — never can discolor.

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SEVEN STANDARD SIZES

Now available from stock in 7 popular sizes. Single Bowl — 54", 60", 72"; Double Bowl — 66", 72", 84", 96".

CUSTOM BUILT

Fits any plan — meets any specifications for continuous drainboards and work surfaces without seams or joints.

A new type GUARANTEE on Lustertone Sinks includes directions for proper use and care of stainless steel.

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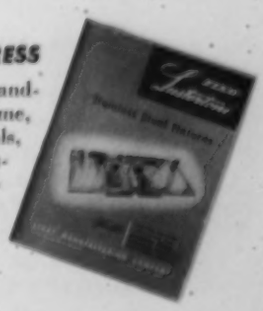

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Chemical Plant
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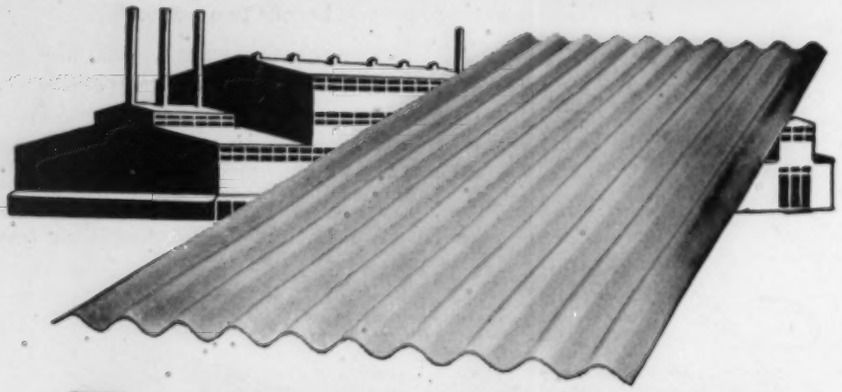

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Specialists in Asbestos-Cement Building Products for over 25 Years

THE RECORD REPORTS

(*Continued from page 22*)

ON THE CALENDAR

Oct. 1–29: "Tomorrow's World — Work, Play and Live," exhibition sponsored by the New York Chapter, A.I.A.; New York Museum of Science and Industry, R.C.A. Bldg., Rockefeller Center, New York City.

Oct. 2–10: Construction Industries Exposition, Sam Houston Coliseum, Houston, Texas.

Oct. 3–31: "Building Today — Churches, Schools, and Theaters," exhibition of contemporary architecture, Akron Art Institute, Akron, Ohio.

Oct. 13–15: Fall Meeting, American Society of Civil Engineers, Statler Hotel, Boston, Mass.

Oct. 13–16: 15th Annual Meeting, National Assn. of Housing Officials, and 3rd Annual Exhibit of Building and Maintenance Products, Olympic Hotel, Seattle, Wash.

Oct. 11–13: Semi-Annual Convention, American Society of Tool Engineers, Biltmore Hotel, Los Angeles, Calif.

Oct. 18–22: 36th National Safety Congress and Exposition, sponsored by National Safety Council, Chicago.

Oct. 25–29: National Metal Exposition, sponsored by American Society for Metals, Philadelphia, Pa.

Oct. 26–28: "Instrumentation for the Process Industries," seminar course on automatic control, Agricultural and Mechanical College of Texas, College Station, Texas.

Nov. 15–17: Fall Meeting, American Oil Chemists' Society, Pennsylvania Hotel, New York City.

Nov. 29–Dec. 4: 18th National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York City.

CONSTRUCTION REPORT

Building and construction contracts awarded in the 37 states east of the Rocky Mountains neared the billion-dollar mark in July to set the cumulative investment commitment volume for this year through July at a point 38 per cent higher than that reported for the first seven months of last year, F. W. Dodge Corporation statistics show.

The total of contracts in July in the 37 states amounted to $962,685,000. This total was 46 per cent higher than that reported for July of last year and 3 per cent higher than the total for June of this year.

The sharp gains were reflected in all major classifications of construction, with nonresidential volume up 56 per cent over July of last year and 8 per

(*Continued on page 160*)

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Full lamp life
Quiet operation
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Dependable performance for fixture life

Strict specifications control the building of every Certified Ballast—Electrical Testing Laboratories, Inc., an impartial judge, then checks and tests them. You're surer of satisfaction with Certified Ballasts.

CERTIFIED BALLAST MANUFACTURERS

Makers of Certified Ballasts for Fluorescent Lighting

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CONSTRUCTION COST INDEXES — Labor and Materials

United States average 1926—1929=100

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corporation, from data compiled by E. H. Boeckh & Associates, Inc.

NEW YORK

Period	Residential Brick	Residential Frame	Apts., Hotels, Office Bldgs. Brick and Concr.	Commercial and Factory Buildings Brick and Concr.	Commercial and Factory Buildings Brick and Steel
1920	136.1	136.9	123.3	123.6	122.6
1925	121.5	122.8	111.4	113.3	110.3
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1940	126.3	125.1	132.2	135.1	131.4
1941	134.5	135.1	135.1	137.2	134.5
1942	139.1	140.7	137.9	139.3	137.1
1943	142.5	144.5	140.2	141.7	139.0
1944	153.1	154.3	149.6	152.6	149.6
1945	160.5	161.7	156.3	158.0	155.4
1946	181.8	182.4	177.2	179.0	174.8
1947	219.3	222.0	207.6	207.5	203.8
May 1948	249.3	251.6	237.1	239.3	234.5
June 1948	249.5	251.8	237.4	239.5	234.7
July 1948	252.4	253.6	241.2	245.1	237.4
	% increase over 1939				
July 1948	**104.4***	**107.2†**	**84.5**	**83.7**	**82.5**

ATLANTA

Period	Residential Brick	Residential Frame	Apts., Hotels, Office Bldgs. Brick and Concr.	Commercial and Factory Buildings Brick and Concr.	Commercial and Factory Buildings Brick and Steel
1920	122.8	122.9	108.6	109.8	105.7
1925	86.4	85.0	88.6	92.5	83.4
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1940	91.0	89.0	96.9	98.5	97.5
1941	97.5	96.1	99.9	101.4	100.8
1942	102.8	102.5	104.4	104.9	105.1
1943	109.2	109.8	108.5	108.1	108.7
1944	123.2	124.5	117.3	117.2	118.2
1945	132.1	133.9	123.2	122.8	123.3
1946	148.1	149.2	136.8	136.4	135.1
1947	180.4	184.0	158.1	157.1	158.0
May 1948	196.2	199.7	173.6	175.3	175.3
June 1948	196.4	199.9	173.9	175.5	175.5
July 1948	203.4	206.8	182.5	181.6	180.9
	% increase over 1939				
July 1948	**135.7**	**148.8**	**91.9**	**86.4**	**91.0**

ST. LOUIS

Period	Residential Brick	Residential Frame	Apts., Hotels, Office Bldgs. Brick and Concr.	Commercial and Factory Buildings Brick and Concr.	Commercial and Factory Buildings Brick and Steel
1920	118.1	121.1	112.1	110.7	113.1
1925	118.6	118.4	116.3	118.1	114.4
1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1940	112.6	110.1	119.3	120.3	119.4
1941	118.8	118.0	121.2	121.7	122.2
1942	124.5	123.3	126.9	128.6	126.9
1943	128.2	126.4	131.2	133.3	130.3
1944	138.4	138.4	135.7	136.7	136.6
1945	152.8	152.3	146.2	148.5	145.6
1946	167.1	167.4	159.1	161.1	158.1
1947	202.4	203.8	183.9	184.2	184.0
May 1948	223.8	227.5	200.6	203.0	201.5
June 1948	230.0	234.2	208.7	210.7	209.0
July 1948	231.3	235.5	210.4	211.3	209.6
	% increase over 1939				
July 1948	**109.8**	**120.1**	**77.2**	**76.4**	**76.1**

SAN FRANCISCO

Period	Residential Brick	Residential Frame	Apts., Hotels, Office Bldgs. Brick and Concr.	Commercial and Factory Buildings Brick and Concr.	Commercial and Factory Buildings Brick and Steel
1920	108.8	107.5	115.2	115.1	122.1
1925	91.0	86.5	99.5	102.1	98.0
1930	90.8	86.8	100.4	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1940	106.4	101.2	116.3	120.1	115.5
1941	116.3	112.9	120.5	123.4	124.3
1942	123.6	120.1	127.5	129.3	130.8
1943	131.3	127.7	133.2	136.6	136.3
1944	139.4	137.1	139.4	142.0	142.4
1945	146.2	144.3	144.5	146.8	147.9
1946	159.7	157.5	157.9	159.3	160.0
1947	193.1	191.6	183.7	186.8	186.9
May 1948	214.9	212.7	202.8	209.6	204.6
June 1948	215.6	213.6	202.9	209.7	204.8
July 1948	222.2	220.4	211.5	217.4	213.6
	% increase over 1939				
July 1948	**110.4**	**121.9**	**80.1**	**78.3**	**83.3**

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926–29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926–29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

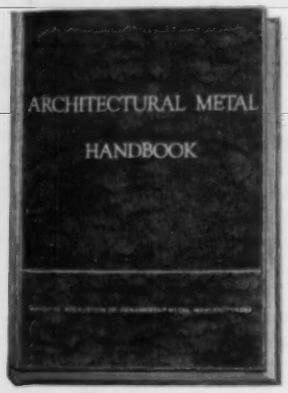
These index numbers will appear whenever changes are significant.

*Erroneously reported for June 1948 as 202.0%; the correct June figure was 102.0%.

†Erroneously reported for June 1948 as 205.7%; the correct June figure was 105.7%.

"We hardly find any person of Good Sense save those who Agree with Us"

DE LA ROCHEFOUCAULD • *Moral Maxims* • 1613-1680



"PERMANENCE, strength and beauty of the copper alloys make them ideal for architectural uses," write Earl P. Baker and Harold S. Langland in the *Architectural Metal Handbook* recently published by the National Association of Ornamental Metal Manufacturers. "A list of these uses would comprise many of the products of the Architectural Metal Industry, especially those whose value lies in beauty of material and the ability to grow old gracefully.

"The alloys of copper and tin, with occasional additions of zinc, or lead *(the 'brass' of scripture)* better known to us as bronze, is *architecture's noblest metal*. The works of sculptors of ancient times have been preserved to us through having been cast in bronze.

"A material of such distinguished tradition is a constant stimulus to the architect, the sculptor and the craftsman to high endeavor lest his creation be unworthy of so noble a material.

"Since the intrinsic value of the metal in any bronze installation is very small as compared with the value of the skilled labor required to fabricate it, it would be unwise not to select the most suitable and most durable metal for the specific purpose. Architectural designers and specification writers should be familiar with the many copper alloys that are available and their uses and limitations."

Almost a century of service to architects, designers and specification writers assures us that the profession is widely informed and duly appreciative of the "noblest metal." Brief reference data on Anaconda Architectural Alloys (with which no busy man need tax his memory) will be found in 1948 Sweet's, File 6B-1. More detailed information may be had on request.

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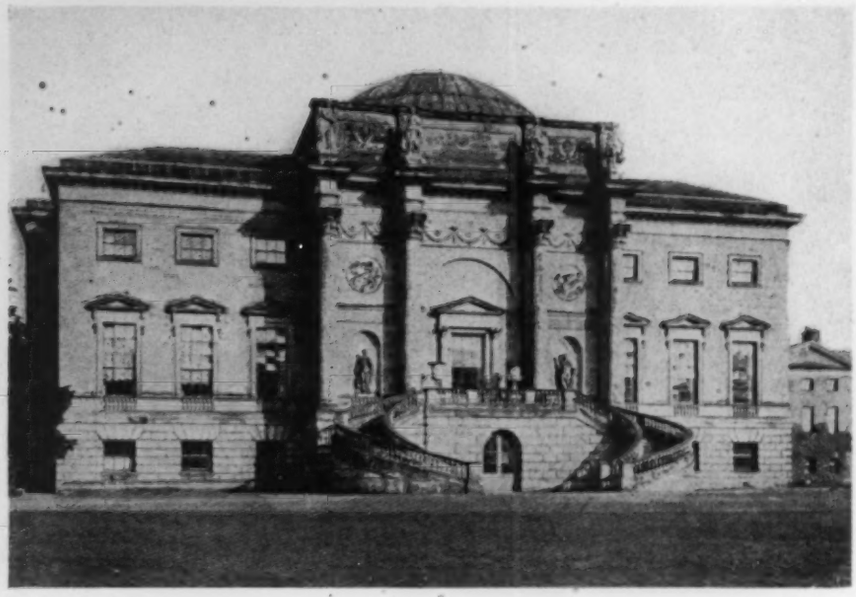
REQUIRED READING



Kedleston, Derbyshire, designed by Robert Adam. From "The Age of Adam"

A FAMOUS FOURSOME

The Age of Adam. By James Lees-Milne. B. T. Batsford, Ltd. (122 E. 55th St., New York 22), 1948. 6 by 9 in. viii + 184 pp., illus. $6.00.

Since time immemorial sons have tended to follow in their fathers' footsteps: professions run through families as persistently sometimes as physical characteristics such as pug noses and red hair. Even so, it is a rare father who bequeaths his life work to not one but four sons, as did architect William Adam of Scotland back in the 18th Century.

William himself, says James Lees-Milne, was "the first strictly classical architect that Scotland produced." More important, he was a highly successful business man — always a help if you have four sons to educate. With malice aforethought, no doubt, he gave all four the best possible training in architecture. The result? The "Adam style."

"Repeatedly," comments Mr. Lees-Milne at the outset of THE AGE OF ADAM, "we overhear the untutored loosely ascribe any mid- or late Georgian, although less frequently early Georgian, building to the Adam brothers. The too common ascription indicates how far the terms 'Adam' or 'Adam style' have become household ones. As it happens, the Adam brothers' active lives and that of the greatest of the four, Robert, lasted only a little over a quarter of a century. In this volume we mean to postulate what is not so platitudinous as may at first appear, namely that the neo-classical or, as we prefer to term it, the 'Adam style' emanated exclusively from Robert Adam."

To prove his point Mr. Lees-Milne has delved into letters, diaries and records of the time and recounts here the story of the brothers from their childhood and early education through to their acceptance as ultra-fashionable architects and designers, concluding with an able analysis of their work.

The brothers were an interesting quartet, as this book clearly shows. John, the eldest, inherited their father's 4000-acre estate, Blair Adam, and eventually made the care of it his life's work; although architecture for him was more of a recreation than a profession, he succeeded his father as Master Mason in North Britain to the Board of Ordnance, and built several fortifications at Fort George. Robert, next to John in age, was the talented one around whom the firm established by the four revolved; his abilities were recognized early by his brothers, who turned all their efforts toward the furthering of his career. James, the third son, served as chief of staff in the firm. "He was a neat draftsman," Mr. Lees-Milne declares, "a scholar, and like his father an excellent business man. But unlike Robert, he possessed little genius. . . ." His name, however, was associated with that of Robert in the design work of the firm. William, Jr., the youngest, looked after the firm's finances, apparently with no marked success, but earned a place in history by carefully preserving 53 volumes of Robert's drawings, which he willed to his niece. These volumes she subsequently sold to Sir John Soane, in whose museum they now are preserved.

How the four worked together, what people and events had their influence on Robert's designs, what effect his work had on his contemporaries and successors — these are the subjects with which Mr. Lees-Milne deals. Plans and photographs are scattered throughout the book, illustrating the many-faceted character of the brothers' achievements.

Most interesting chapter in the book, probably, is that summing up Robert Adam's three distinct periods of work: the early period, 1758–1770, in which he specialized in country houses; the middle period, 1770–1780, street houses; and the late period, 1780–1792, public buildings. Here Mr. Lees-Milne not only describes and tells the history of the buildings themselves, but also gives a critical analysis of each and a summary of Adam's characteristics in each period. For instance: "The tendency was for the buildings of Robert Adam's early period to display exteriors composed of boldly projecting masses and supported by gigantic orders in the Roman style. . . . His interiors of this period are likewise divided into rather large units, embracing bold naturalistic motifs."

"In his middle period," the author continues, "Adam's exteriors lost their plastic for linear values. . . . The result was that Adam's exteriors became less satisfactory, with the suppression of projections and reliefs, except upon his façades of narrow street architecture, where the suppression was not ill-considered and the ensuing austerity looked well enough." Nonetheless, these London town houses were masterfully planned, and splendid in their detail.

As for the last period of Adam's career, it was, says Mr. Lees-Milne, "one of ambitious promise, but almost consistent unfulfilment." It was in this period that he made plans for Cambridge and Edinburgh Universities, almost wholly unrealized, and gave his attention to monumental town planning schemes.

THE AGE OF ADAM is an interesting book, and an instructive one, scholarly without being erudite. It should appeal as much to the lay public as to the architect and architectural student, the decorator, and the antiquarian.

TEXTBOOK ON MASONRY

Masonry Simplified. By J. Ralph Dalzell and Gilbert Townsend. Vol. I: Tools, Materials, Practice. Vol. II: Practical Construction. American Technical Society (Drexel Ave. at 58th St., Chicago 37, Ill.), 1948. 5½ by 8 in. Vol. I, xii + 368 pp., illus., $4.50. Vol. II, xii + 406 pp., illus., $5.00.

Intended primarily as a textbook for masons, these two volumes are sure to be widely used also by architects, contractors and builders, who will find them excellent reference books on masonry

(*Continued on page 30*)

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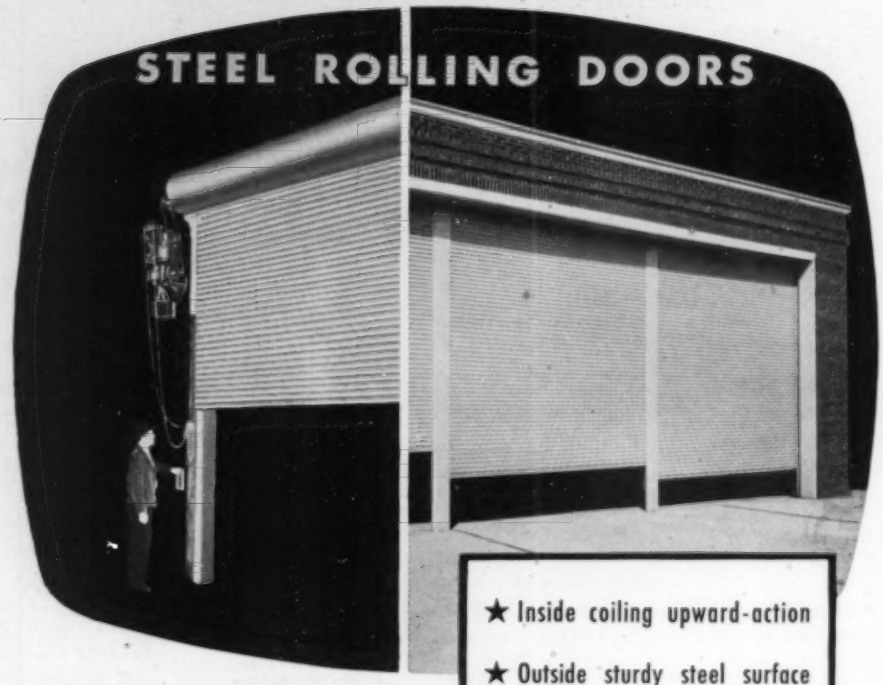

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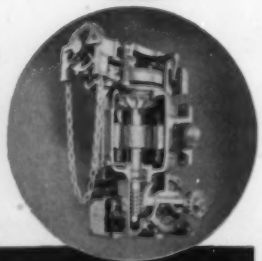

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REQUIRED READING

(*Continued from page 28*)

construction. Both volumes are well illustrated and carefully indexed. Together they cover every possible phase of modern masonry practice.

All the fundamentals of masonry construction are discussed and illustrated in the first of the two volumes, with three chapters devoted to a study of the cementitious materials used, and a fourth given over to a beautifully clear lesson in blueprint reading. All this makes fine background material for the following chapters on concrete masonry, structural clay tile and brick masonry, and a final one on walks, drives and steps.

Volume II is concerned not with principles but with practice, and it is this volume that is likely to be of chief interest to the architect. Starting with a chapter on building forms for concrete, it carries through footings, foundations and waterproofing, beams and lintels, column design and construction, chimneys, fireplaces, walls and partitions, all the way to septic tank systems.

Messrs. Dalzell and Townsend and their illustrator, Arthur E. Burke, have presented all this wealth of material in consistently simple form so that even a brand new apprentice could understand it. Particularly useful features of the two volumes are the introductory notes to each chapter, the lists of questions answered in each chapter, the very complete review questions, and the large and easily understandable illustrations.

BOOKS FROM ENGLAND

BRITISH HOUSING PLANS

Home and Environment. By Walter Segal. Leonard Hill, Ltd. (17 Stratford Place, London, W. 1, Eng.), 1948. 9 by 11¼ in. xviii + 226 pp., illus. 37s. 6d.

Lively activity in the fields of housing, redevelopment and urban replanning in Great Britain has produced a wealth of published material on those subjects, and HOME AND ENVIRONMENT is an excellent addition to the list.

The book is divided into three main sections: The Small House; Flats and Maisonettes; and Site Planning. Under the first heading several different types of housing are studied, including detached and semi-detached houses, terrace and patio houses. Here, as again in the second section, each plan solution is discussed from the standpoints of living requirements, position of various rooms and service facilities, advantages and disadvantages, etc. The third and final section, Site Planning, receives

(*Continued on page 220*)

ARCHITECTURAL

RECORD

THIS VICARIOUS EXPERIENCE—PLUS

EVEN the radio has popularized the slogan that "experience is the best teacher." But for any one individual to acquire through his own experience enough knowledge to conceive and put on paper all by himself the design and specifications for even a small house is obviously impossible. Do I hear someone say, "Shucks, I do that every day"? But do you? Just from *your own* experience? Just how much of your experience is really vicarious? When you come to analyze it, hasn't most of the knowledge you acquired come from the experience of others? It might be good for our designs, our egos (and for our clients, employees, contractors and all the rest) if we acknowledge that fact and ponder it a bit, all by ourselves. That vicarious experience, that knowledge of our art and science is one of the unearned increments of modern life (unearned by us, though perhaps bought dearly by our predecessors).

The important things about vicarious experience is how and where we can get the most of it and the best, our judgment in making use of it and, last but not least, our ability in adding to it, through our own intelligence and imagination, our bit toward better solutions.

It is worth while, if a bit humbling, to examine our sources of vicarious experience. Our ability to analyze, judge, choose, decide and create comes first from our academic training, the early absorbing of facts, principles, practices and techniques that stem from the long ages of building experience and research, passed on by the instructors in the school. Allied to this knowledge, thus gained from vicarious experience, is that to be had from books, architectural periodicals, research reports, and manufacturers' literature. Most architectural experience, past and present, is thus recorded — experience in planning, design, structure, materials, equipment, furnishing and techniques. These are the most readily available sources of the constant changes and improvements in the art as they are brought about.

Again both our partners and our employees supply their, to us, vicarious experience on which we must rely, trusting their discrimination and judgment. Stepping outside the architectural firm itself, there is available the vast amount of valuable experience of consultants, specialists, experts, engineers. And, in this connection, one should take full advantage of the experience of clients — owners, managers, superintendents, users of buildings. Much can be gained also from the practical experience and advice of contractors, foremen, and the artisans themselves.

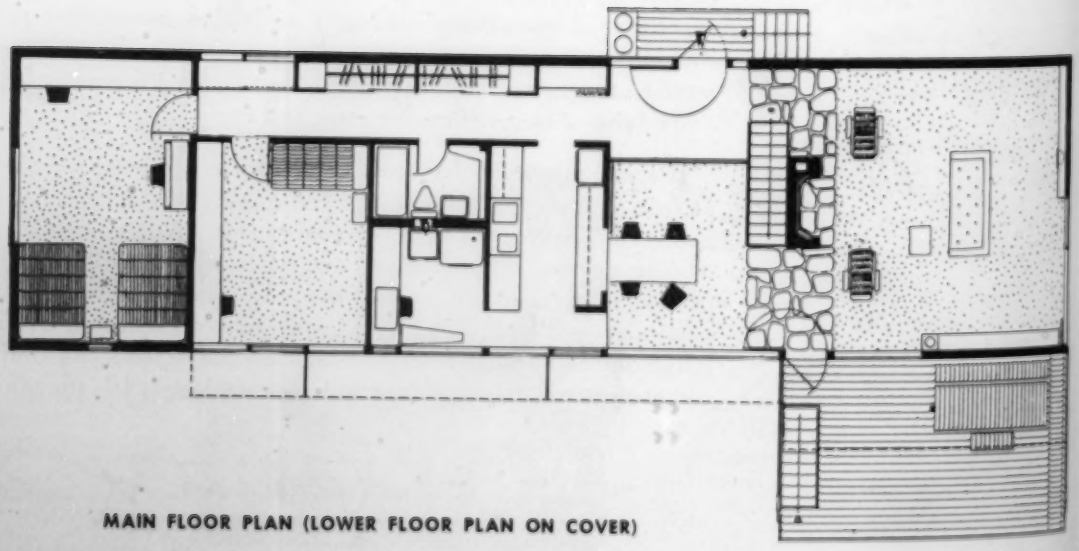
It would thus seem that architectural competence depends, in larger measure than at first appears, on the quantity and quality of the vicarious experience absorbed and used. That is where our personal experience comes in. In the use of all this, the architect's own critical analysis and judgment must be constantly employed in deciding on the validity of the material presented and on its possible application to the particular problems in hand. Still, while acknowledging all this, in the end our value is determined by what we add to our vicarious experience to improve the soundness, commodity and delight of the buildings we design. It's the plus that counts!

Kenneth K. Stowell

EDITOR

Damora

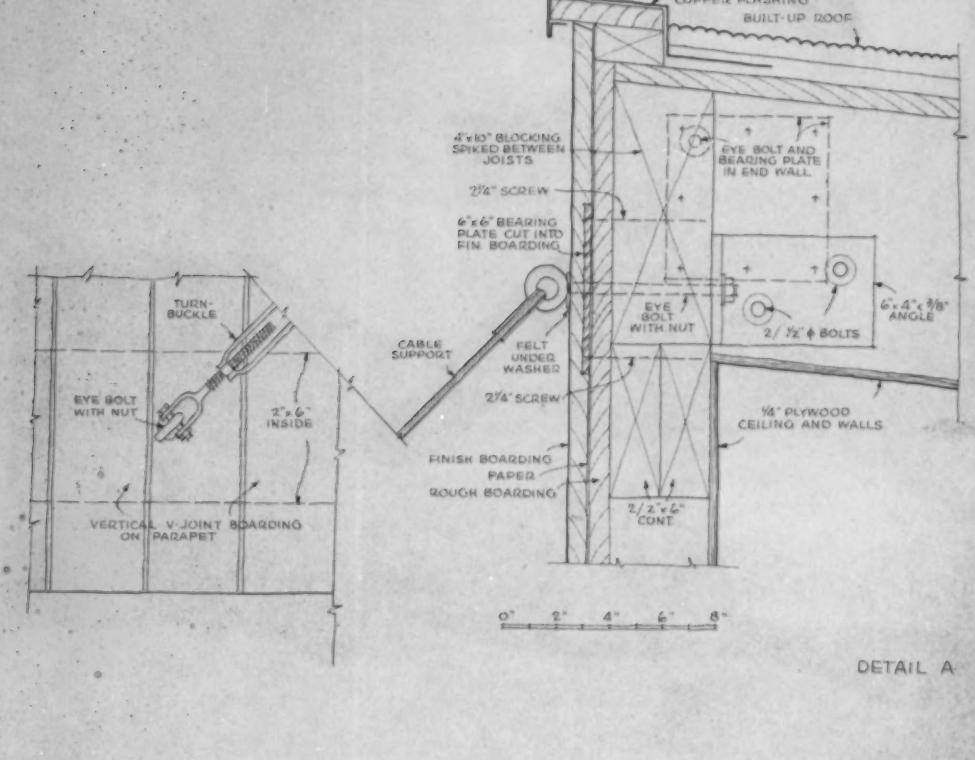
Marcel Breuer



MAIN FLOOR PLAN (LOWER FLOOR PLAN ON COVER)

MARCEL BREUER BUILDS FOR HIMSELF

For his own home Breuer has done a house which undoubtedly will find its way into future texts on architecture. Certainly there will be paragraphs pointing out to future students its sensuous qualities. For there is much in this house to warrant not only a lyrical note, but also to stand up under critical analysis. The sense of suspension which characterizes the design is readable in some degree in the photographs, is felt much more strongly by actual visitors. The suspension is a fact, not merely a feeling; the balcony porch is suspended on steel cables, as are also the sunshades. The stairs, too, actually hang from the hanging porch. Probably, nevertheless, the sense of suspension comes rather from the cantilever than from the actual suspension. The irresistible appeal of the cantilever is here developed to the ultimate degree. What Breuer has done, in effect, is to build a small basement story above ground, and then balance a full-size one-story house



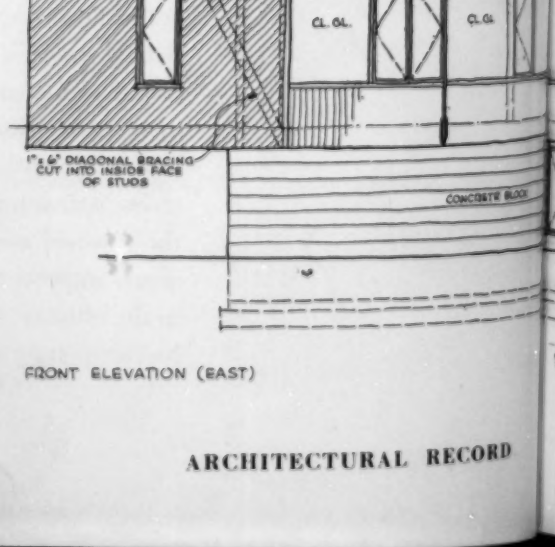
DETAIL A

Construction is very similar to that of the so-called American frame house, but the frame was designed (with small dimensional lumber) to accommodate the long cantilevers — 10 ft. at either end. Floor members carry very little of the cantilevered load — the diagram on the front cover shows the floor joists running crosswise of the cantilever. Main load is carried by sheathing and weather boarding (though the latter is not considered as structural); both are used diagonally, the sheathing in one direc-

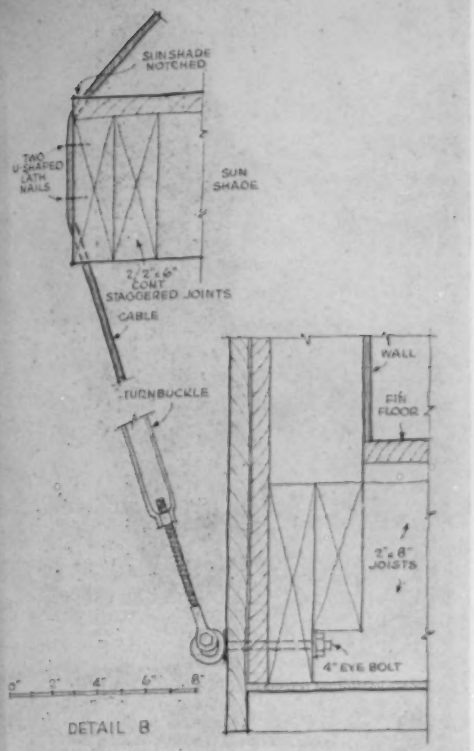
Marcel Breuer

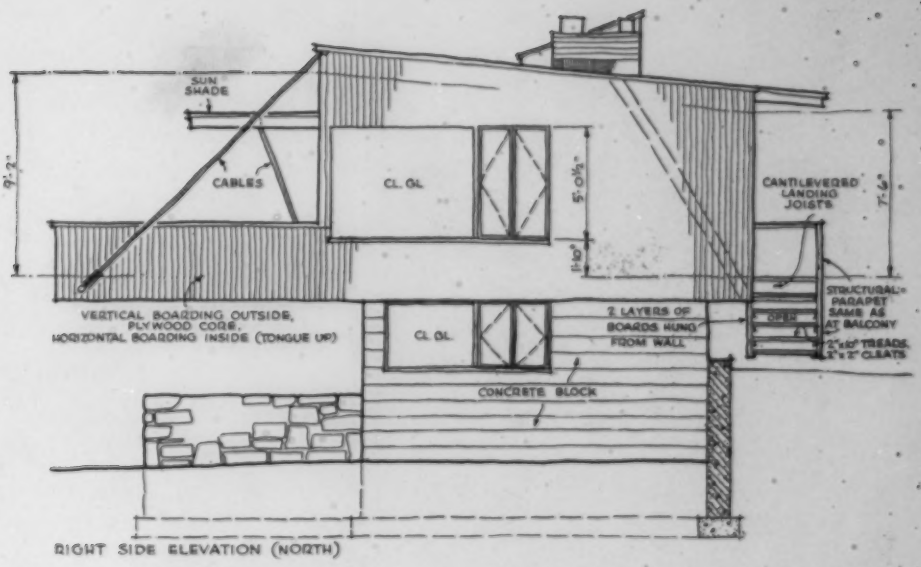
neatly atop it, cantilevered on all sides, with really long cantilevers at the ends. It looks as if the lower floor had been planned for its relatively small space needs, and the main floor planned separately for its needs, then the two combined. And that is exactly what happened.

The true story of this house, however, lies in the simple engineering logic with which its esthetic qualities were achieved. It was not done with any damn-the-expense design, but rather with what Breuer characterizes as "traditional frame construction adapted to achieve very large cantilevers without heavy framing members, or steel or concrete." Any Connecticut carpenter could understand, and approve, the almost primitive use of ordinary boards and rough lumber. And

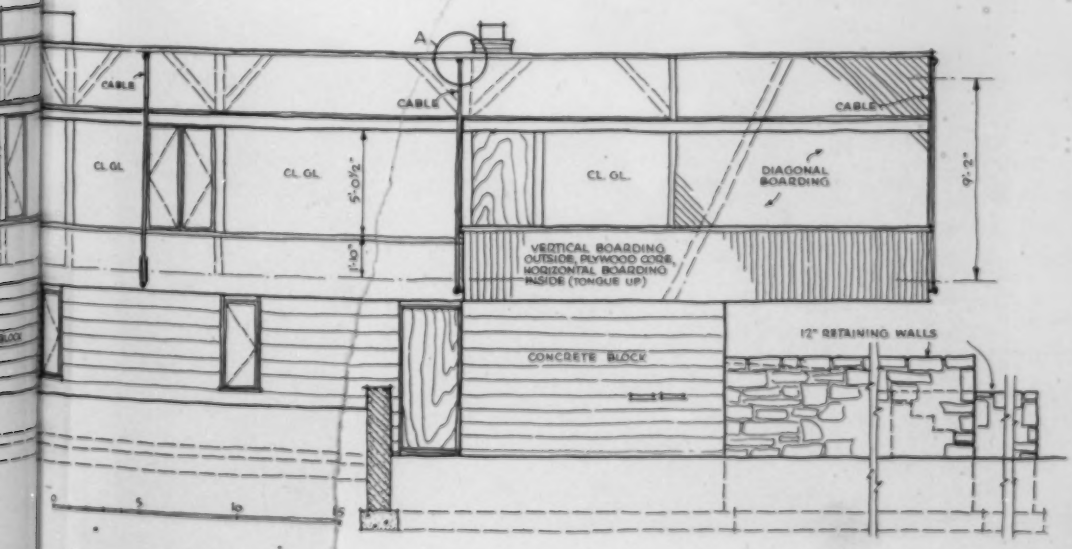


FRONT ELEVATION (EAST)





tion, the outer boards in the other. The walls become in effect full-height trusses. Let-in bracing provides additional strength. Double 2 by 6's, in the position of the upper plate, carry the tension across the top of the house, and balance the pull from either end section. Four-by-four posts, in addition to normal studs, carry the extra weight. The porch is suspended (see details) by steel cables, using a type of hardware and turnbuckles used for the rigging of boats; they came from a Provincetown hardware store and cost $22.00 all together. The end elevation shows how the weight is transmitted to the frame, the ordinary boarding again taking its share of the tension. Also there is some true cantilevering in the extension of the joists from house to porch. And the porch parapets enter into it too, being considered as structural plate trusses. The exterior stair is suspended from the floor of the porch, with a miniature concrete block to act as a stabilizer. Sunshades too are supported by tension cables



Marcel Breuer

Damora

any parsimonious Yankee could appreciate this particular victory over inflation in building costs.

Far from being an expensive house, it is surprisingly economical. Careful cost checks show a cube cost of just 75 cents, a total cost of $17,300. The total is less than half what most visiting architects have been guessing when they first register its expanse.

In the interior a similar approach to design has used essentially simple materials and ideas with equally good effect. The interior finish is painted plywood throughout, except the ceiling of the living-dining entrance space, which is cypress boarding, and the larger bedroom, which is natural gum plywood. Floor surfaces are Haitian mattings, bluestone and black asphalt tile.

Painting is white throughout, combined with natural wood surfaces, with certain walls in quite definite colors. The north wall of the living room is a strong cobalt blue, the low screen wall between dining room and entrance is the same color on both sides, so is one wall of the larger bedroom, with the adjacent walls one white and one a dark, neutral brown, the fourth a medium gray.

The house is planned for active living, including considerable entertaining, without servants. Visitors help in the kitchen. Connection from kitchen to other rooms is without doors, sliding cupboard doors connect dining table to kitchen. And from the centrally placed kitchen everything in the house and outdoors can be supervised — children, deliveries, also guests.

Marcel Breuer

Damora

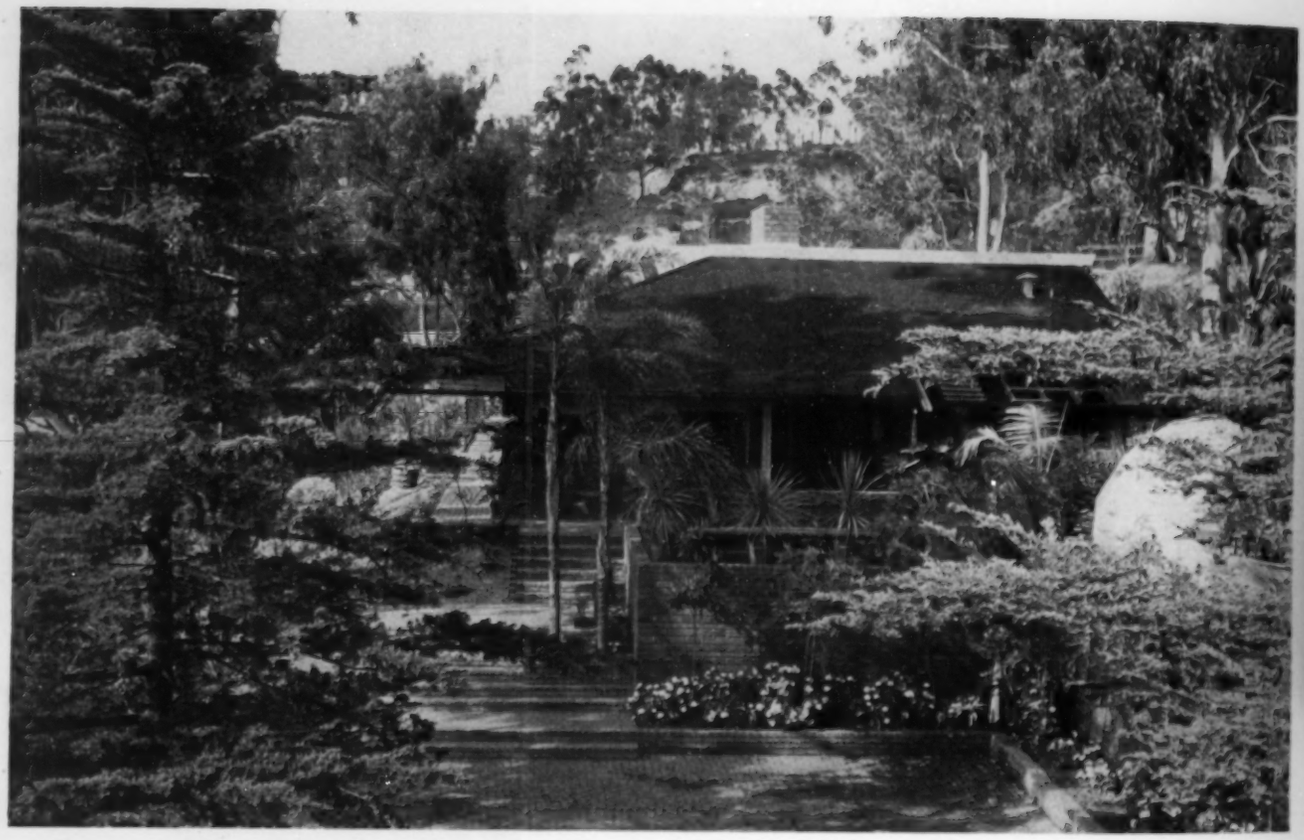
The bedrooms are used also in the daytime as living rooms. The large bedroom has a piano, a large counter-desk for drawing, painting, correspondence, etc. The smaller bedroom too has room for a similar counter, also for comfortable seats.

The lower portion houses all auxiliary functions — heating, storage, second bathroom, workshop combined with guest room, playroom, and another bedroom for a five-year-old son, close to playroom, workshop and outdoors. And the lower level is a dirt and noise trap, appreciated alike by parents and children.

STUDIO-HOME OF THE

DEL MAR, CALIFORNIA

John Lloyd Wright, Architect

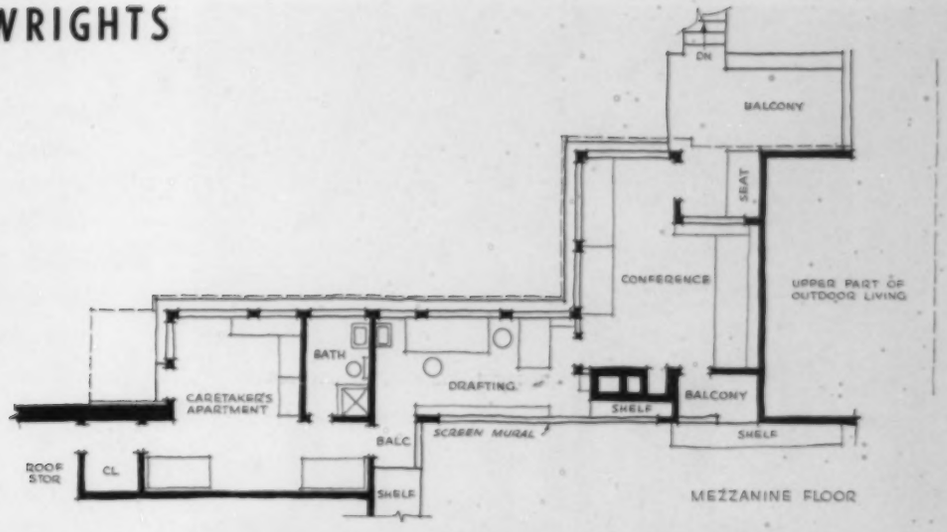


Handley Photos by Schneider

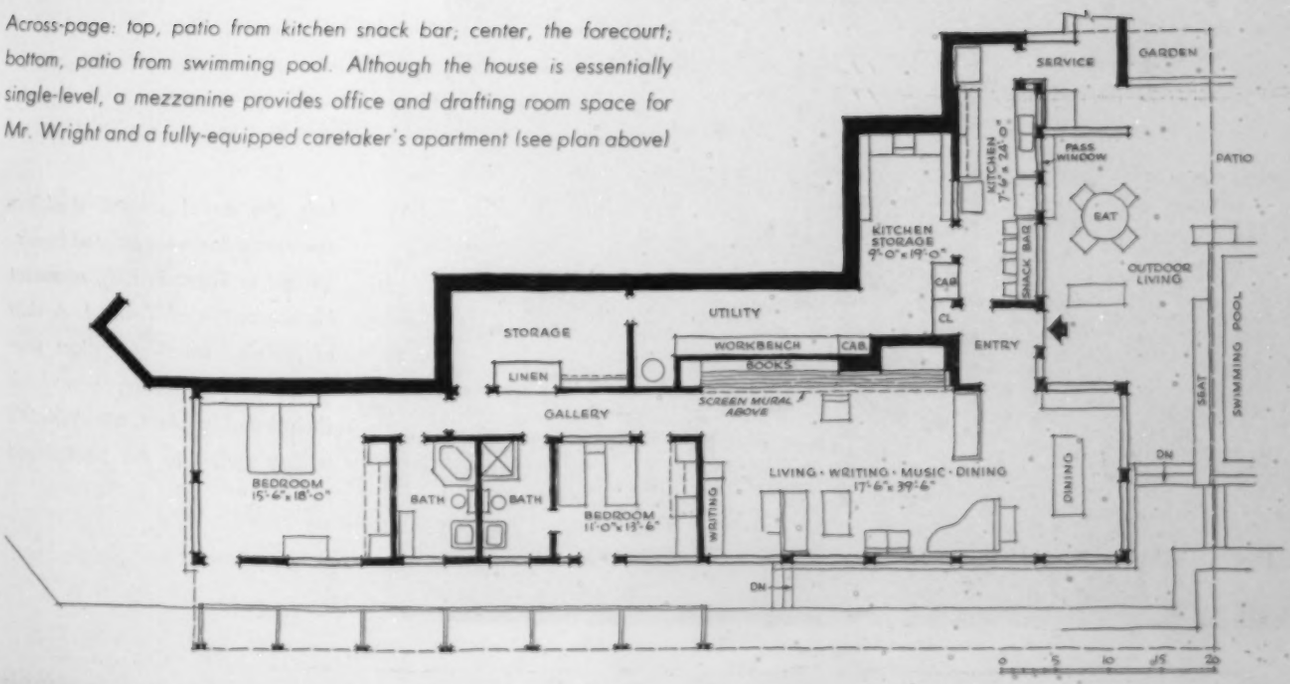
MERGING into its luxuriant four-acre site so well that it seems to be a part of the landscape, this studio home of John Lloyd Wright and his author-wife, Frances Wright, successfully separates working and living areas though keeping them within the main body of the house. Mr. and Mrs. Wright like to work together, so the drafting room is located on a mezzanine opening via a screen mural to the writing area below. An upper-level entrance is provided for the architectural office to keep business activities "out of the house."

Of wood frame and reinforced concrete construction, the house has exterior walls of handmade adobe burned brick (orange terra-cotta) from a nearby canyon. White stucco is "woven through" the exterior creosoted wood; the shingles of the pitched roof are redwood.

JOHN LLOYD WRIGHTS



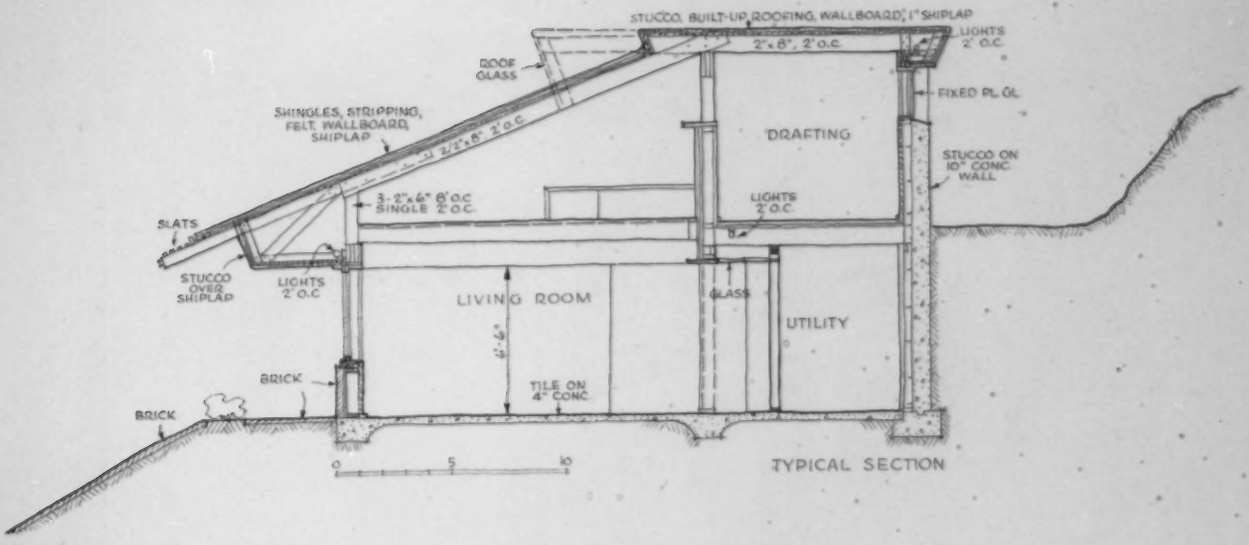
Across-page: top, patio from kitchen snack bar; center, the forecourt; bottom, patio from swimming pool. Although the house is essentially single-level, a mezzanine provides office and drafting room space for Mr. Wright and a fully-equipped caretaker's apartment (see plan above)



Left: living room and dining area; windows overlook swimming pool. All interior woodwork is stained with pastel water colors, with ceilings in sunset coral tints. Floors are red quarry tile in living areas, gray ceramic tile in bedrooms

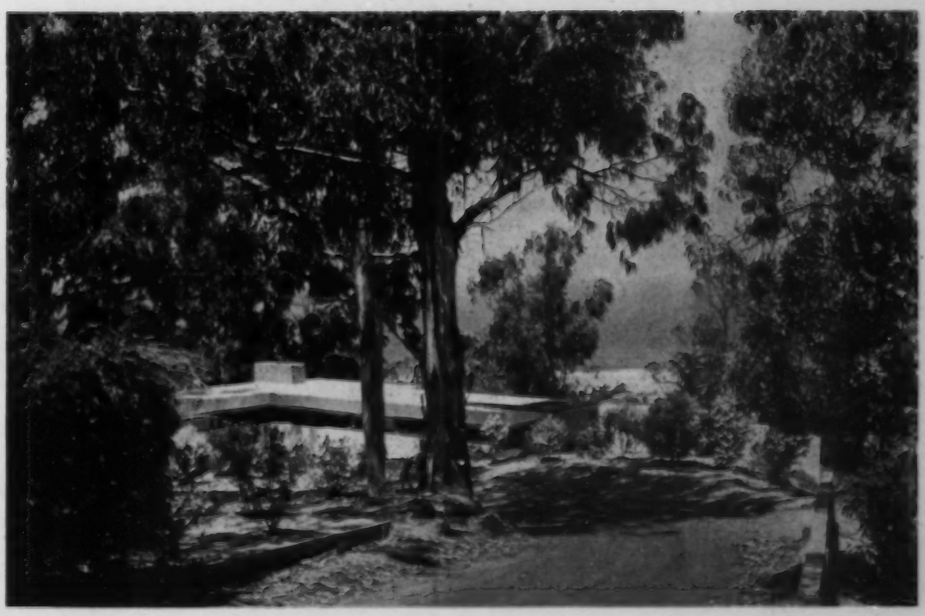
Right: entrance door is enriched with eucalyptus acorns from premises

Left: the mural screens shielding the mezzanine were painted by Mr. Wright in Tokyo in 1916, represent his conception of Toyland. A strip of paneled translucent glass provides special lighting over book shelves and fireplace. Mrs. Wright's writing corner in left background



The house occupies a flat area bulldozed through the side of the cliff and rests on a reinforced concrete mat. All windows are stationary plate glass with ventilating panels in the wall below. Left: kitchen walls are pale yellow tile, ceiling is dusty blue, floor pale gray ceramic tile

Hendley Photos by Schneider



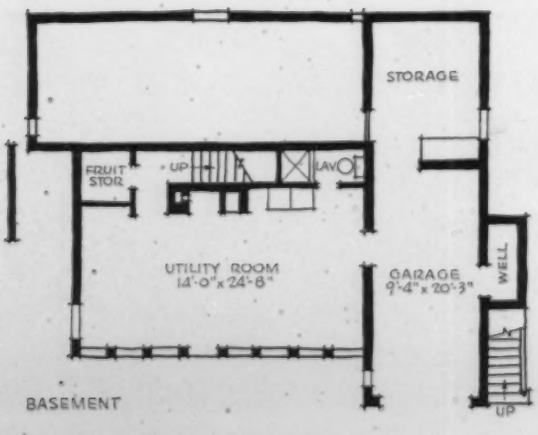
Right: the drafting room terrace

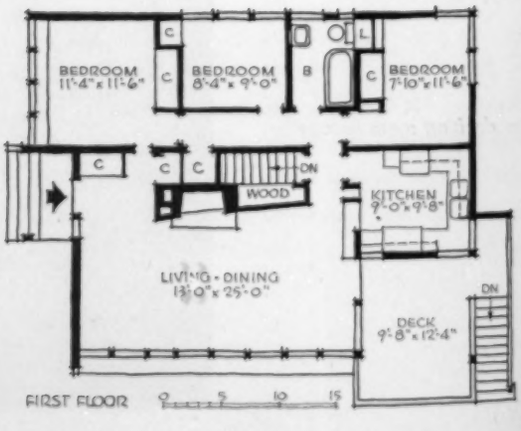
Richard Garrison Photos

A COUNTRY HOUSE IN THE PENNSYLVANIA HILLS

The Lloyd A. Young Residence, Bradfordwoods, Pa.

Mitchell & Ritchey, Architects





The main entrance, shown above and to left of photo on opposite page, is at the side of the house. Living room stretches full length, with huge utility room below opening to terrace

BUILT into the side of a hill, this Pennsylvania residence looks deceptively small from one level and deceptively large from the other. The secret lies in a multi-purpose utility room on the lower level, which comes within inches of being as large as the living room above it. Actually, the house is a small one, with all rooms on one floor and all but the living room very modest in size.

Several features lend special interest to the plan, chief among them the pseudo entrance hall gained by the placement of the "front" door opposite the deep end of the fireplace wall, and the minimal corridor achieved by the bedroom arrangement.

The direct simplicity of the exterior is well keyed to the deep-country character of the site in the hills just north of Pittsburgh. Vertical redwood siding relieves the predominantly horizontal lines of roof and windows. All windows except those in the kitchen are fixed sash, at the specific request of the owner. Ventilation is by louvers and a fan and duct system.

The deck, above, is handy to the kitchen and offers complete seclusion for outdoor dining. Left: the dining end of the living room; door in background leads to deck

Richard Garrison Photos

Above: the fireplace wall in the living room is of knotty pine, contains unusual storage facilities; main entrance is at left. All windows are fixed sash except for kitchen casements, and ventilation is controlled by louvers beneath the windows and a fan and duct system. Floors are linoleum covered, lighting is fluorescent

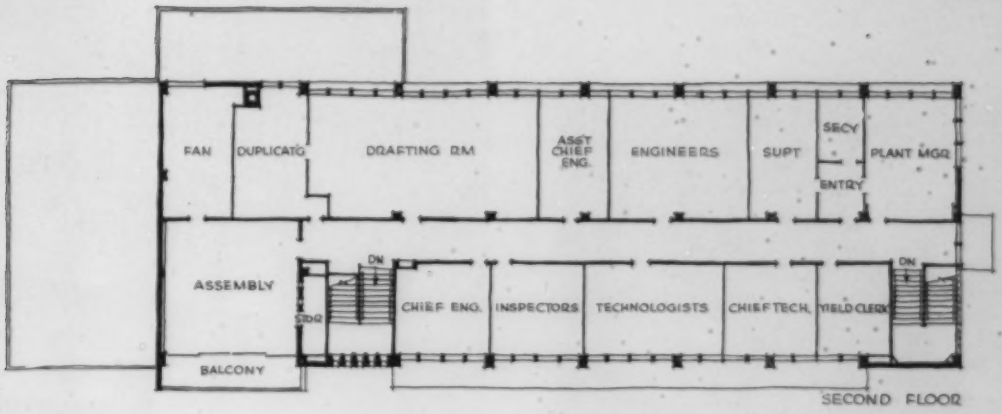
TWO OFFICE BUILDINGS FOR SHELL OIL

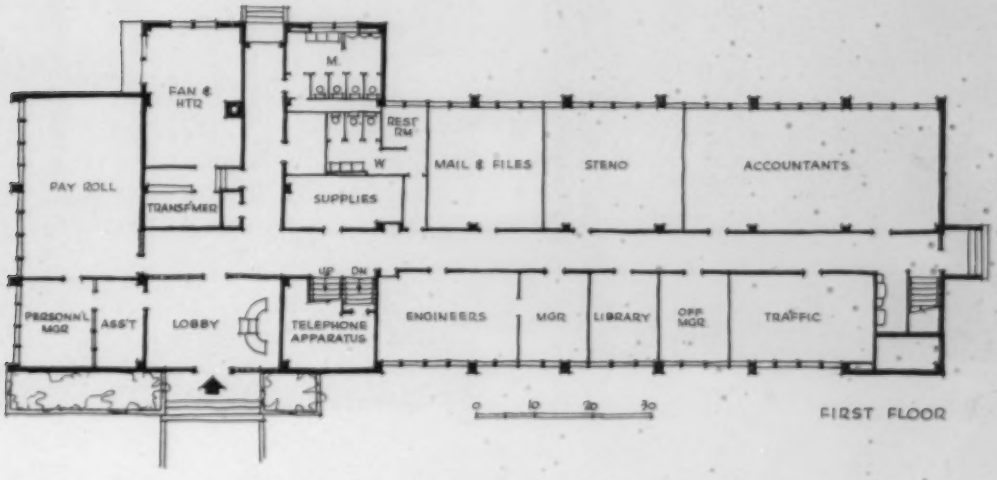
1. OFFICE BUILDING FOR AMMONIA PLANT, SHELL POINT, CALIFORNIA

Kaufmann, Lippincott and Eggers

Architects

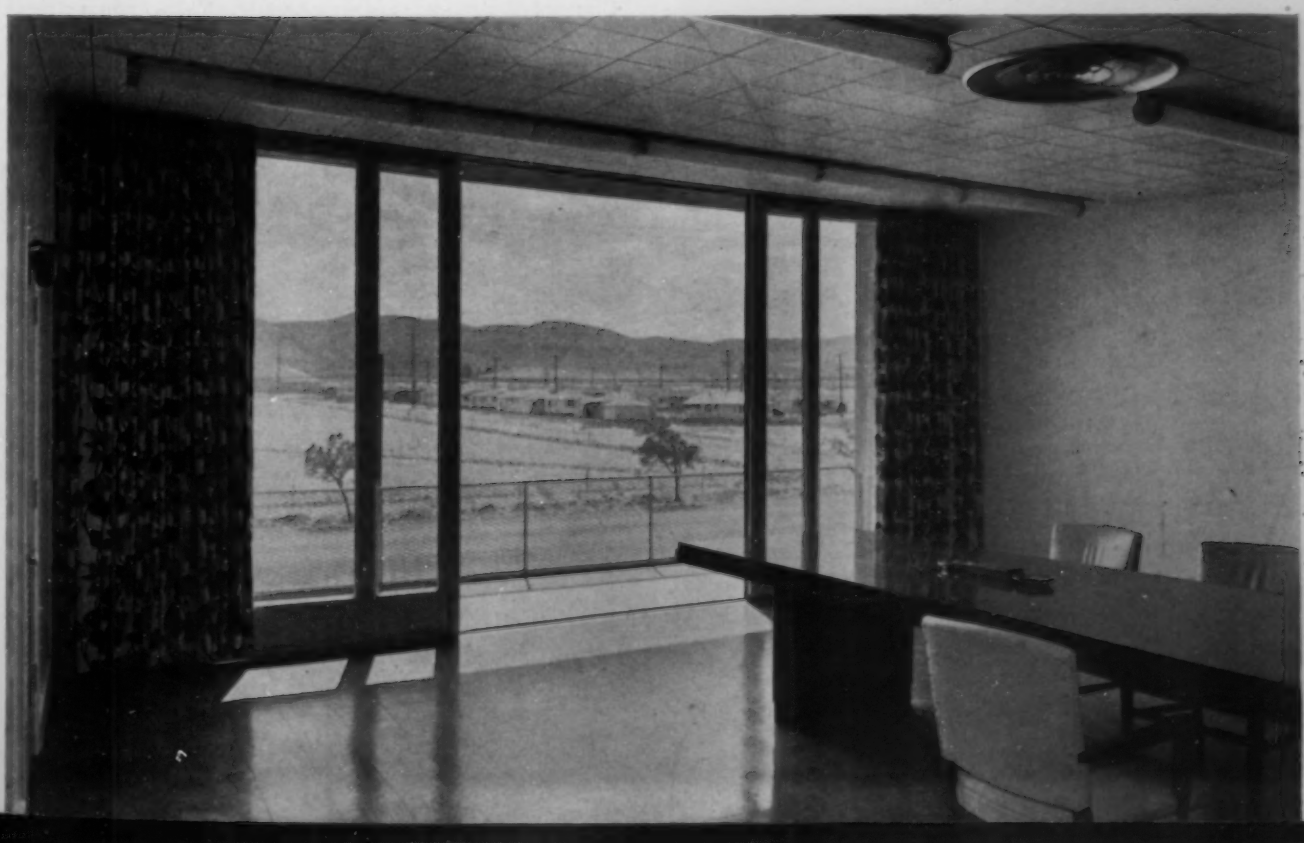
NOT very often do photographs tell their own story as adequately as do these of two industrial office buildings for the Chemical Division of Shell Union Oil Corporation. While the untrained observer would surely be impressed by a certain confident authority in the design, an analytical eye is rewarded by recognizing the essential fitness of each separate element. The modular pattern, for example, is frankly expressed, since the columns were placed on the exterior in order to preserve complete flexibility for interior partitioning. Similarly other elements explain themselves — the fenestration, the eyebrows, the balcony which opens the conference room to outdoors, and so on.



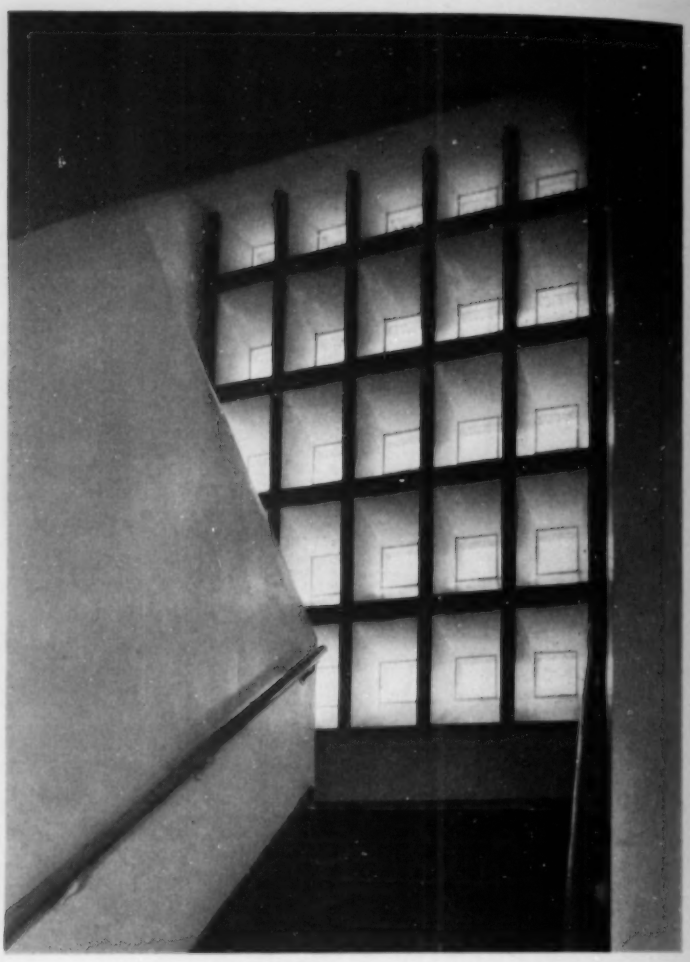


Both buildings (this one and the Martinez office building) were designed on a 4-ft. module — columns on 16-ft. centers, windows and fluorescent fixtures at 4 ft., air supply outlets 8 ft. on center from plenum chamber over corridors. Steel universal forms 2 by 3 ft. dictated the height of this concrete building at 12 ft. floor to floor. Overhangs are a continuation of the floor slabs

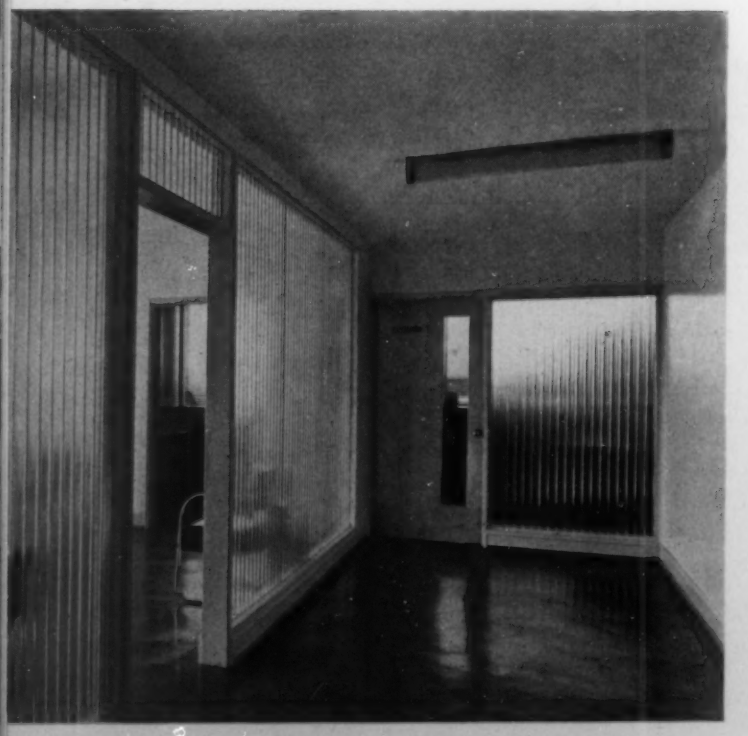
Roger Sturtevant Photos



Roger Sturtevant Photos

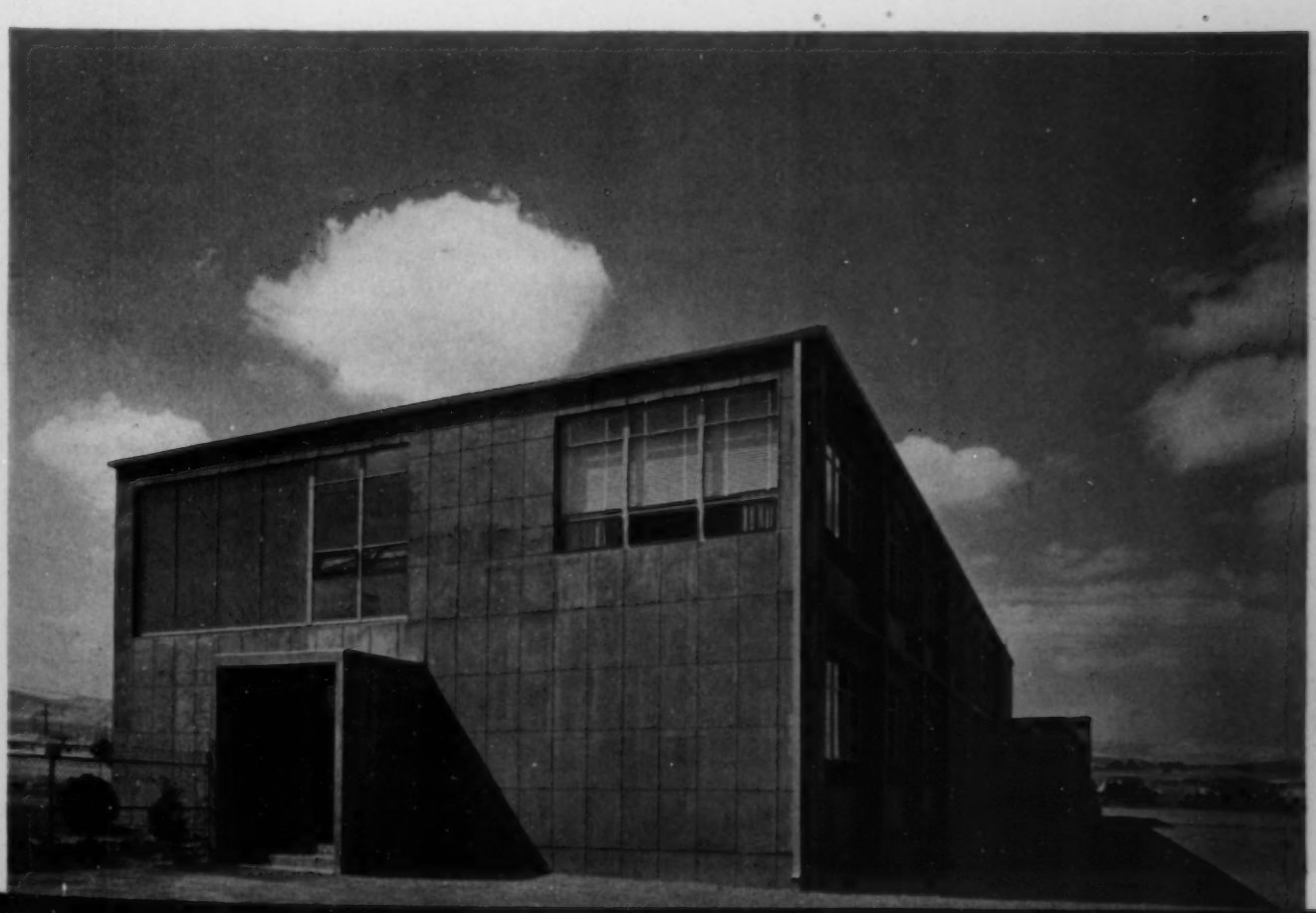


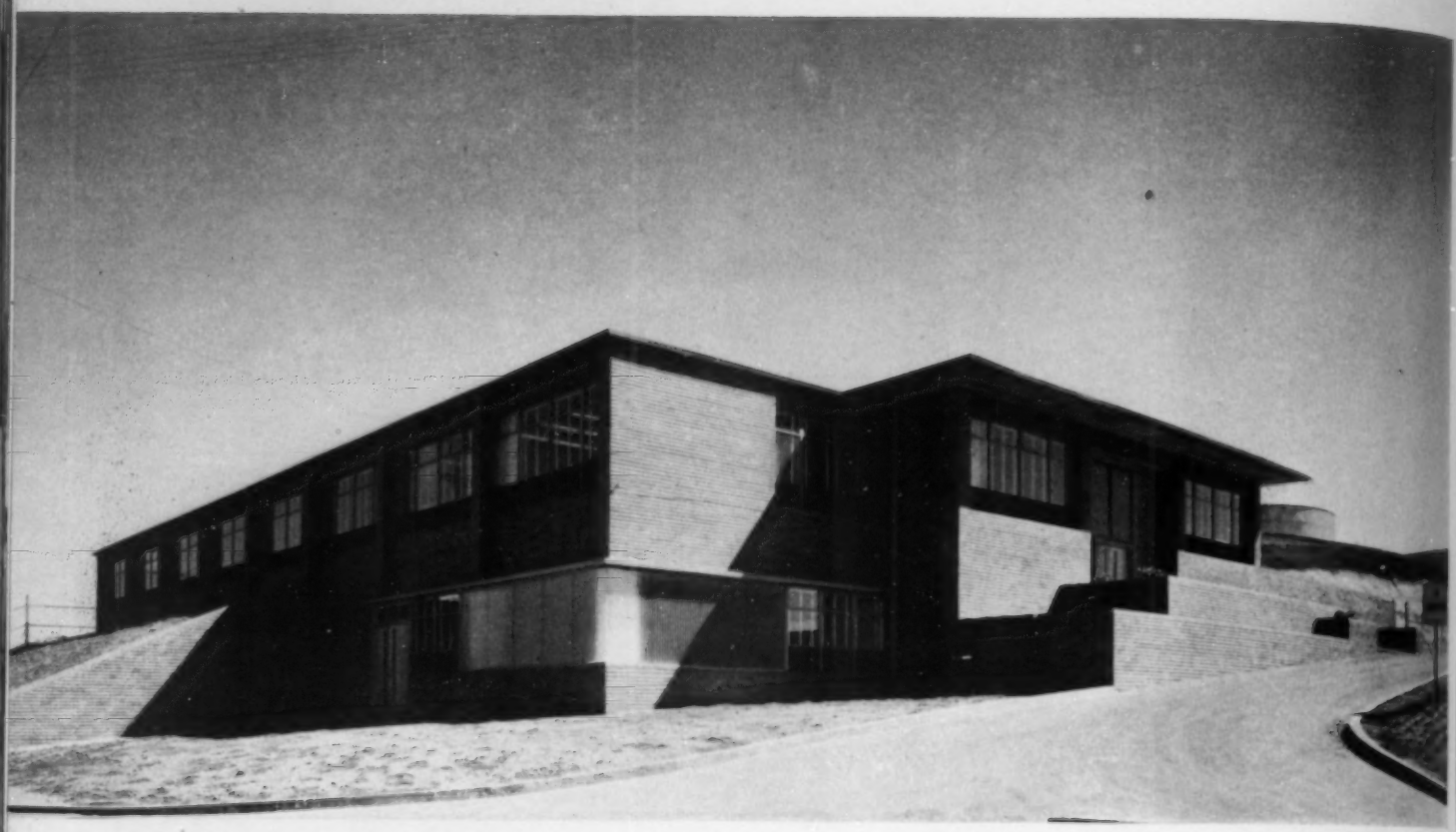
Stair hall windows, a quiet element on the exterior, become a dramatic feature inside, through the simple device of angling the window embrasure to enlarge the opening



Corrugated glass at the front of the lobby (below) brings a cheerful but soft daylight to the interior, and the same treatment at the rear of lobby extends the daylight effect to the corridor (left)

With the exception of the drapes, the manager's office has the typical finish — acoustic tile ceiling, painted plaster walls, asphalt tile flooring, some wood trim in natural finish, and demountable partitions. The structural system is reinforced concrete throughout, with normal column girder and pan floor system, all of which has been reduced to the greatest simplicity to make the building as economical as possible



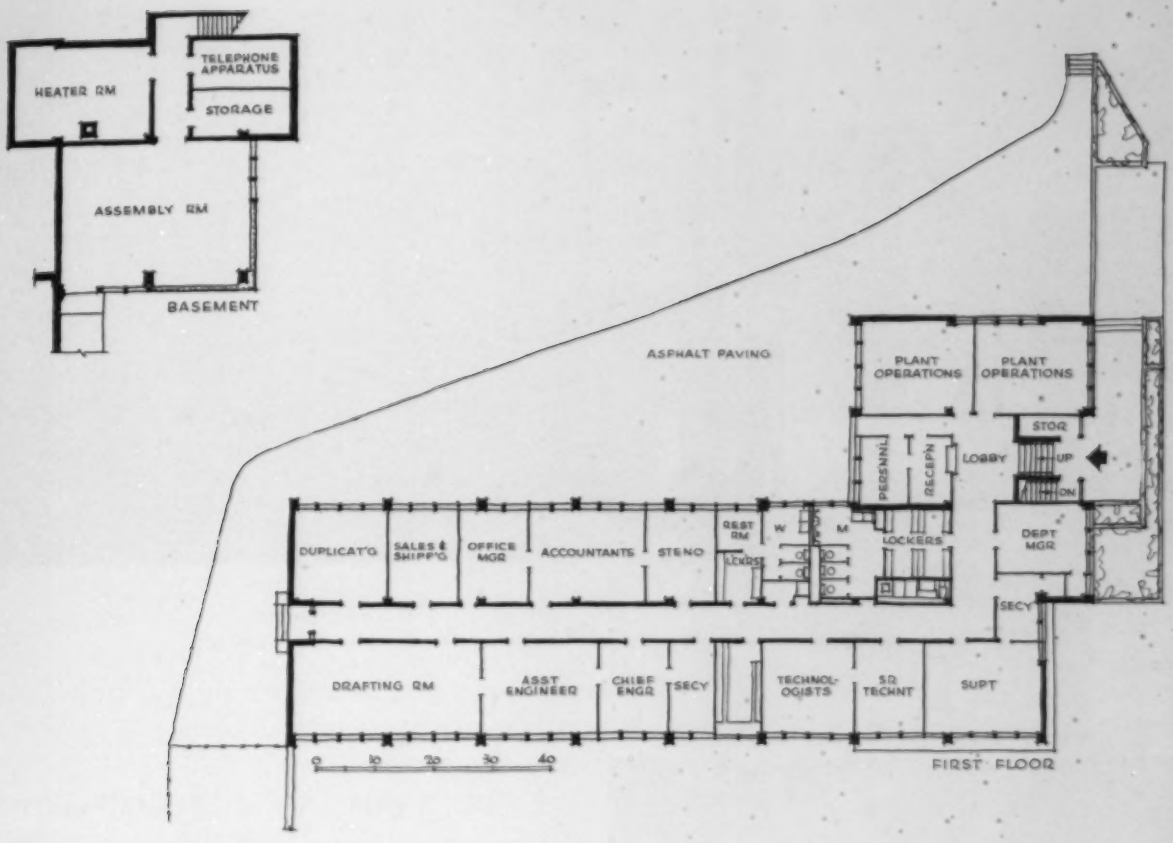


2. OFFICE BUILDING FOR ALCOHOL PLANT, MARTINEZ, CALIFORNIA

Chemical Division, Shell Union Oil Corporation

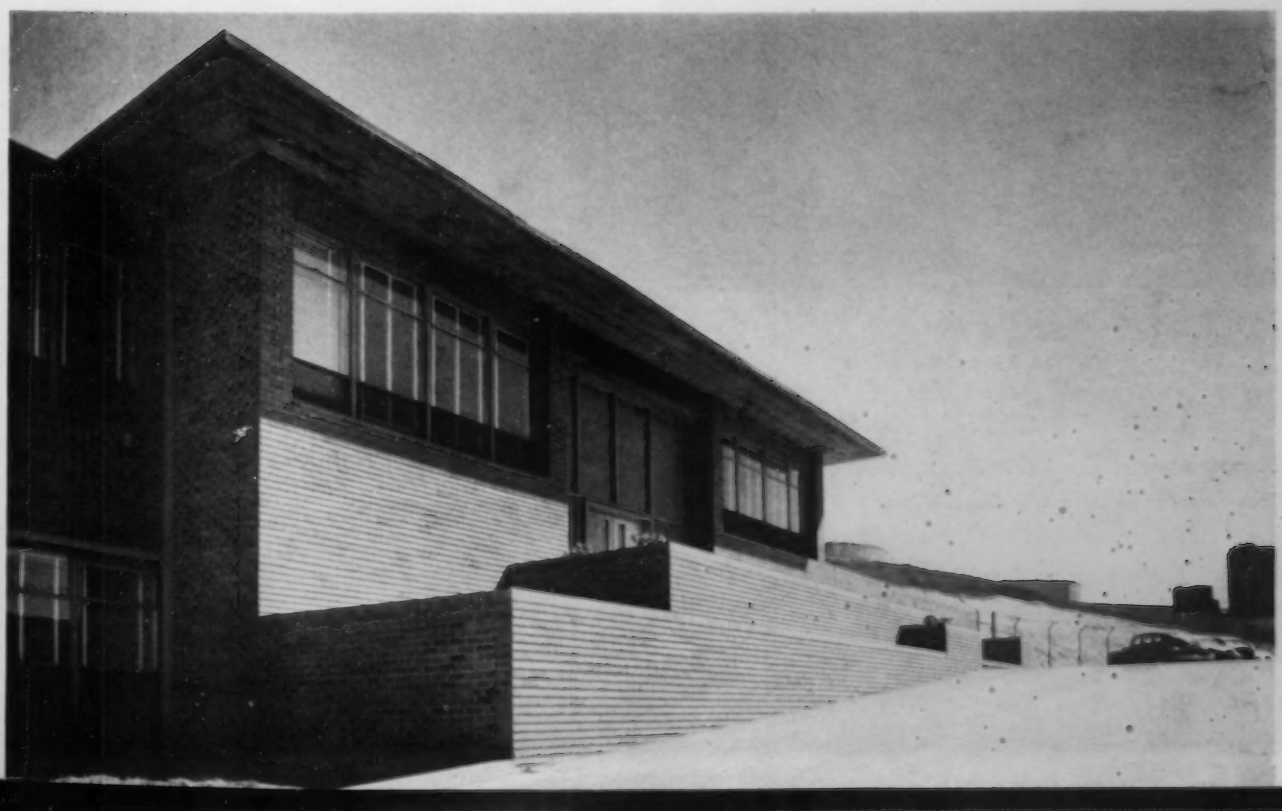
Kaufmann, Lippincott and Eggers, Architects

Though this building differs in appearance from the one preceding, it is basically the same scheme adapted to another site. It has the same objective — flexible office space for a large chemical plant — the same modules of space, windows, lights, and air conditioning outlets. Except for the brick exterior, it also has the same materials throughout. And, while the composition is entirely different, the same basic elements still speak out with a similar directness, a similar note of competence and efficiency. Here perhaps, though, there is a heightened dramatic effect in the hillside angling.



Office space can be subdivided at any 4-ft. window mullion, as the plan indicates; thus there could be an 8-ft. office ("secy" on plan), a 12-ft. unit for an executive, and so on upward to large open offices. As in the preceding building, columns are outside; there is nothing inside to interfere with placing of standard movable partitions in any desired position

Roger Sturtevant Photos



Lobby, recessed of necessity because of the stairs, is opened to daylight with large window panels of corrugated glass

Roger Sturtevant Photos

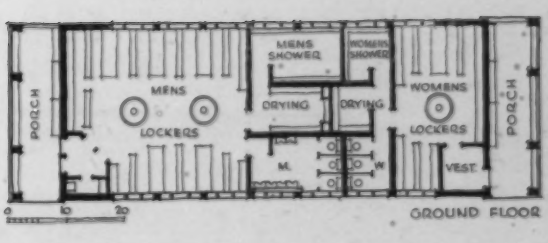
This corridor photograph could have been taken in either of the two office buildings, as both interiors are identical. Ceilings are furred down for air conditioning ducts; floors, asphalt tile

Manager's office, right, shows standard office interior — acoustic tile ceiling, asphalt tile floor, painted plaster walls

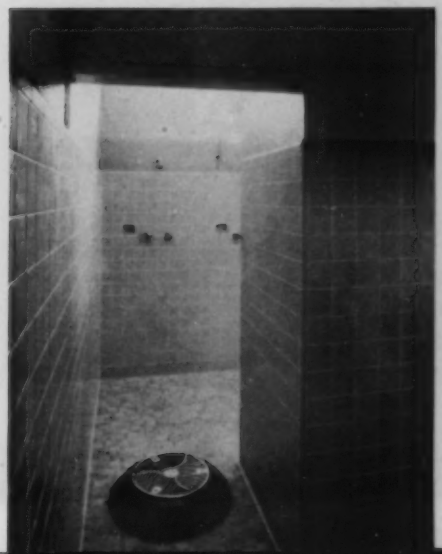
"CHANGE HOUSE," MARTINEZ PLANT

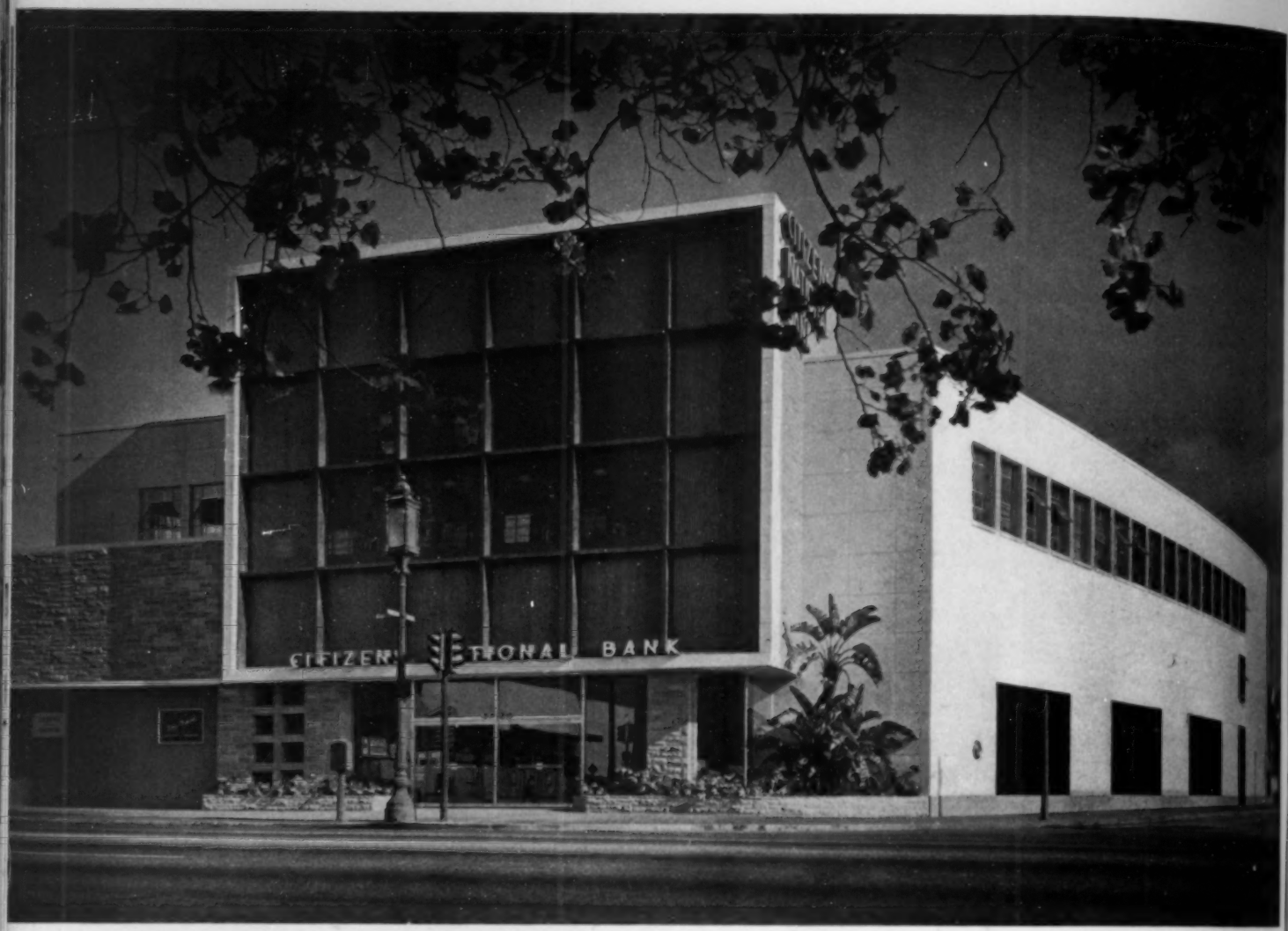
Kaufmann, Lippincott and Eggers, Architects

WASHROOMS become a separate building at this large chemical plant of Shell Union Oil Corporation. Plan shows its original layout for wartime operation, but since the plant no longer employs women, the center solid wall has been broken through, and the men have taken over.



Roger Sturtevant Photos





Julius Shulman Photos

BOLD DEPARTURE FROM TRADITIONAL BANK DESIGN

Citizens National Trust and Savings Bank, Los Angeles

Stiles Clements Associated Architects & Engineers

REPRESENTING a distinct departure from traditional bank architecture, the new branch of the Citizens National Trust and Savings Bank on Wilshire Boulevard, Los Angeles, features an impressive façade of plate and corrugated glass panels, aluminum and limestone. The west side of the building (right in photo above) is of architectural concrete finished with mica flakes; ground floor windows here have dark green louvers to minimize the glare of the afternoon sun.

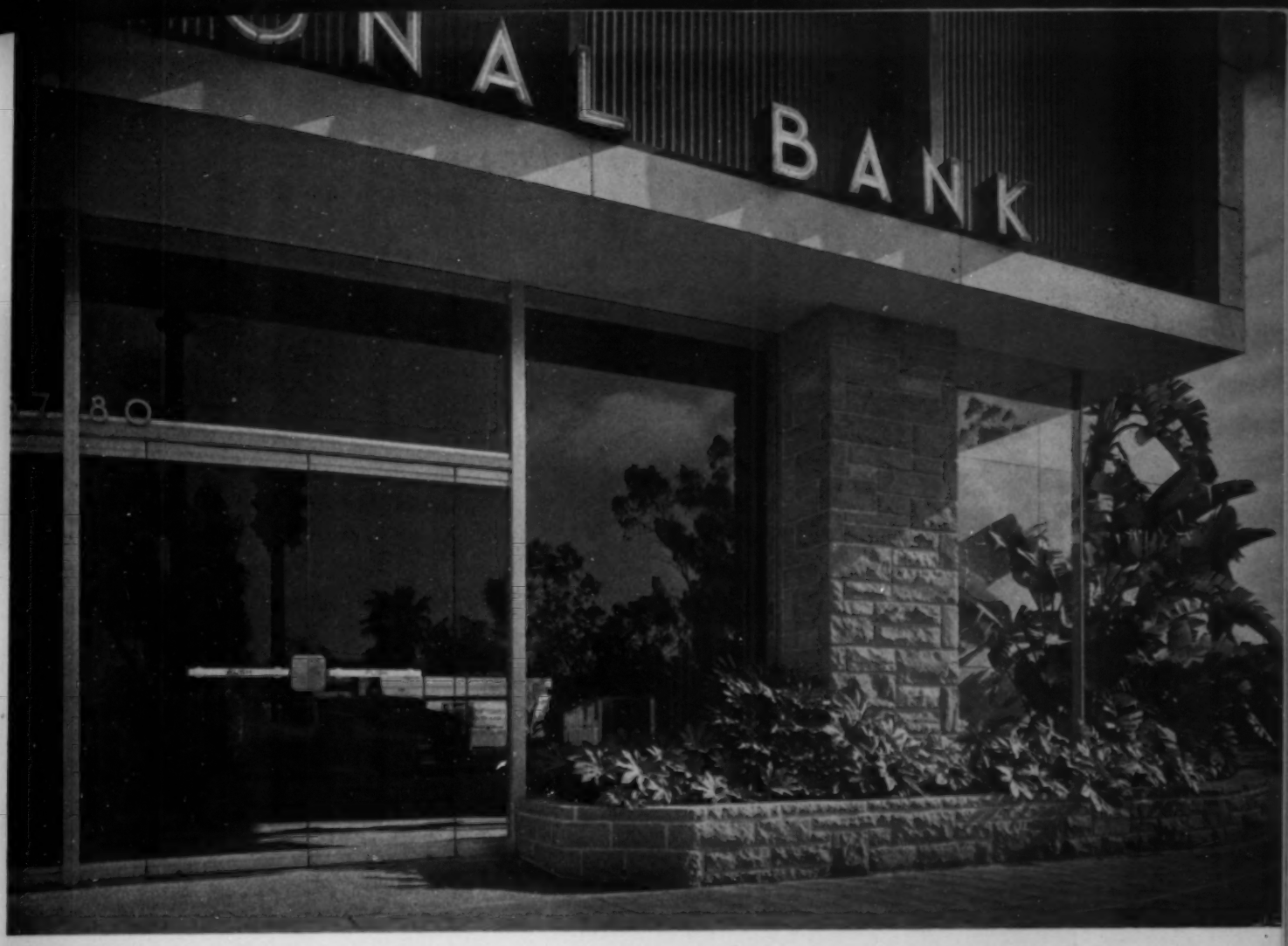
The exterior stone flows through into the interior to add interest to the plaster and bleached mahogany veneer wall treatment. Floors are terrazzo in the entrance areas, carpeted in soft green elsewhere. Fixtures are of bleached mahogany and corrugated glass; railings are plate glass. Drapery and corrugated glass baffles screen the tellers' area from the noise of the work space.

The bank itself occupies only the first floor and mezzanine. The second floor contains a rental area totaling about 10,000 sq. ft., lounges, and future escrow room for the bank. Additional rental space is provided by a store to the east of the main entrance.

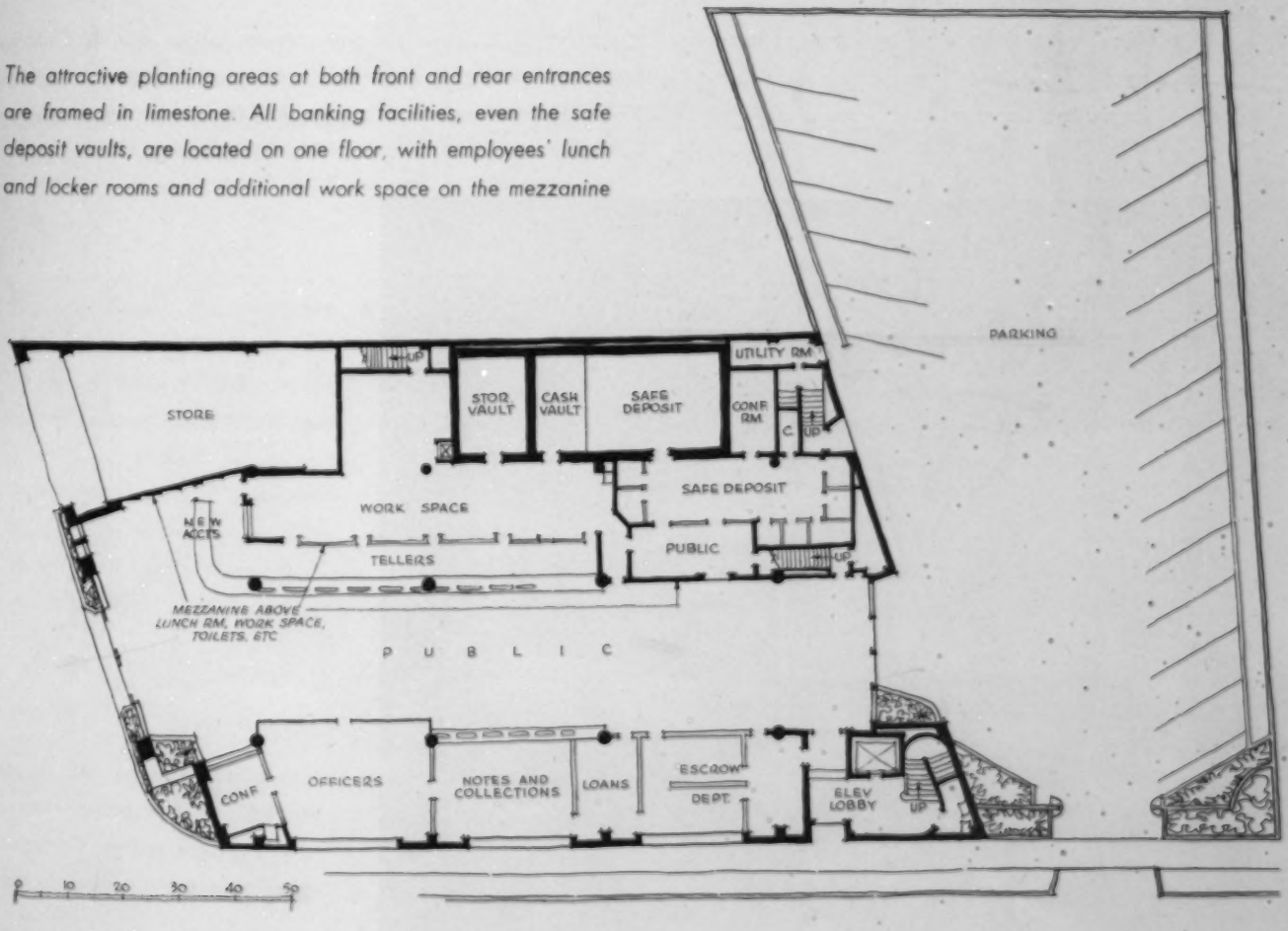
CITIZENS NATIONAL BANK
CITIZENS NATIONAL BANK

Julius Shulman Photos

The main entrance (above) looks across Wilshire Boulevard to Hancock Park and the Hollywood Hills. Doors are tempered glass with aluminum metal finish. The parking lot entrance to the rear is similarly treated (see page 120)



The attractive planting areas at both front and rear entrances are framed in limestone. All banking facilities, even the safe deposit vaults, are located on one floor, with employees' lunch and locker rooms and additional work space on the mezzanine

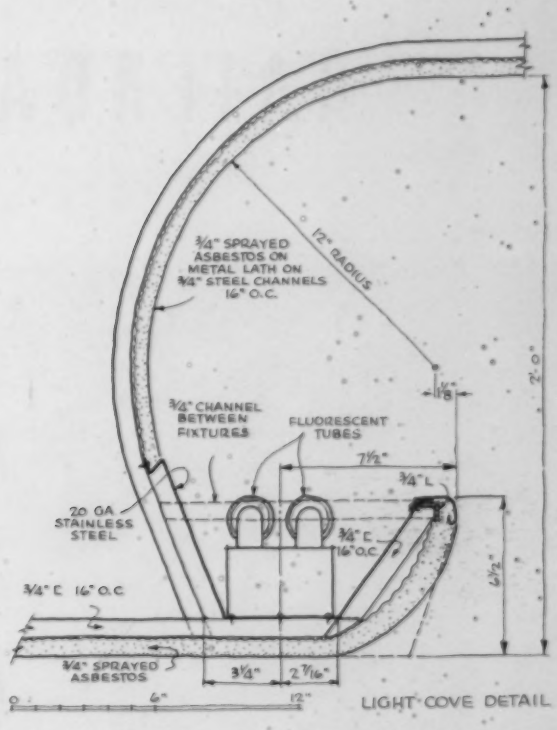


Above: view through the bank from main entrance to parking lot. Columns are green Verde Antique marble. Ceiling is sprayed asbestos to increase acoustical absorption; center portion is 2 ft. lower than side panels, permitting continuous longitudinal fluorescent light troughs. The drop ceiling also has rectangular light troughs, and flush floods are widely used

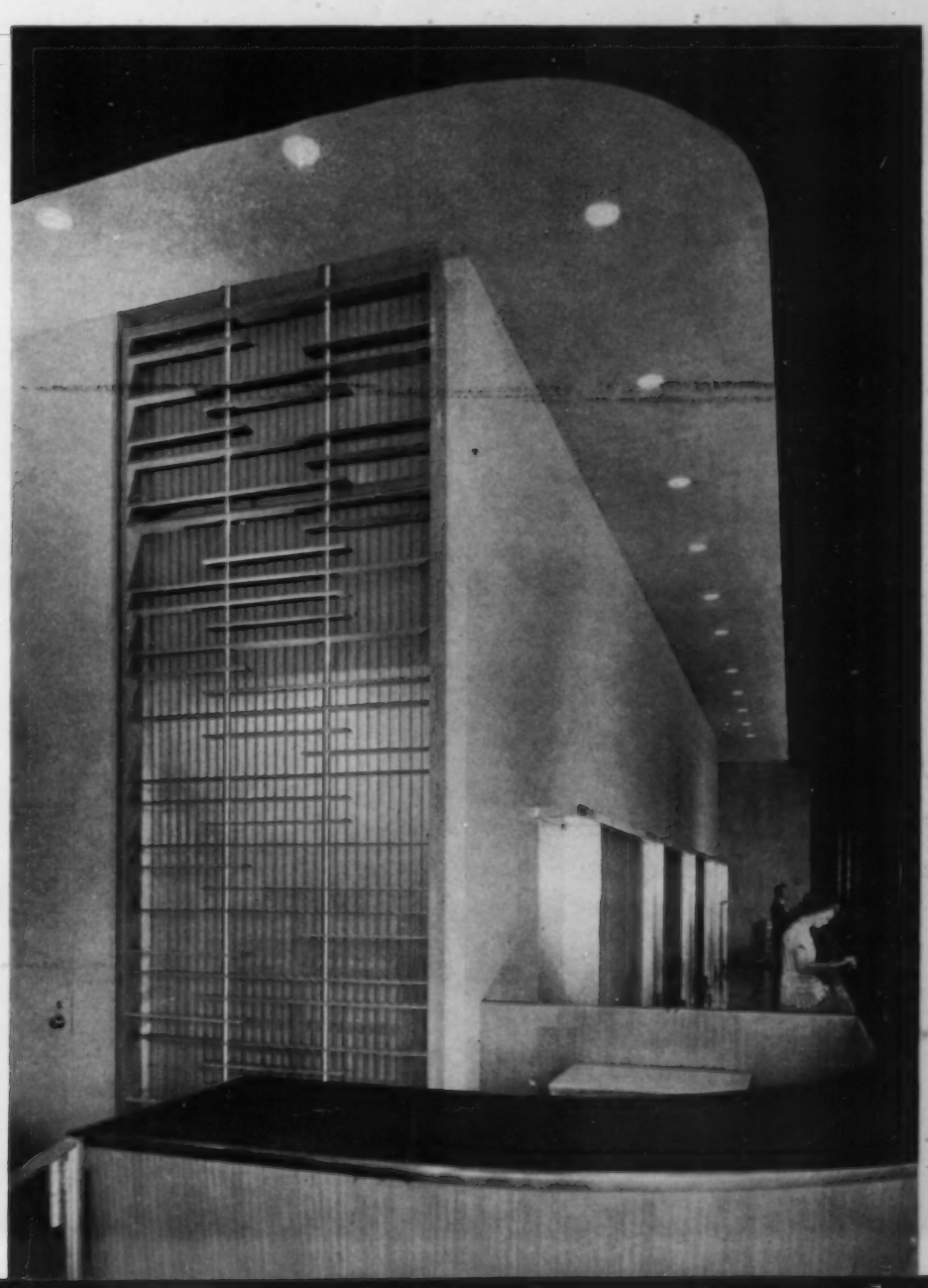
The officers' section (left) is separated from the public area by a plate glass railing. Corrugated glass screens the conference room

Julius Shulman Photos

Lighting has been carefully worked out to maintain approximately 35 footcandles at counter height for the critical areas such as desks, counters and tellers' cages. Detail of light cove at right



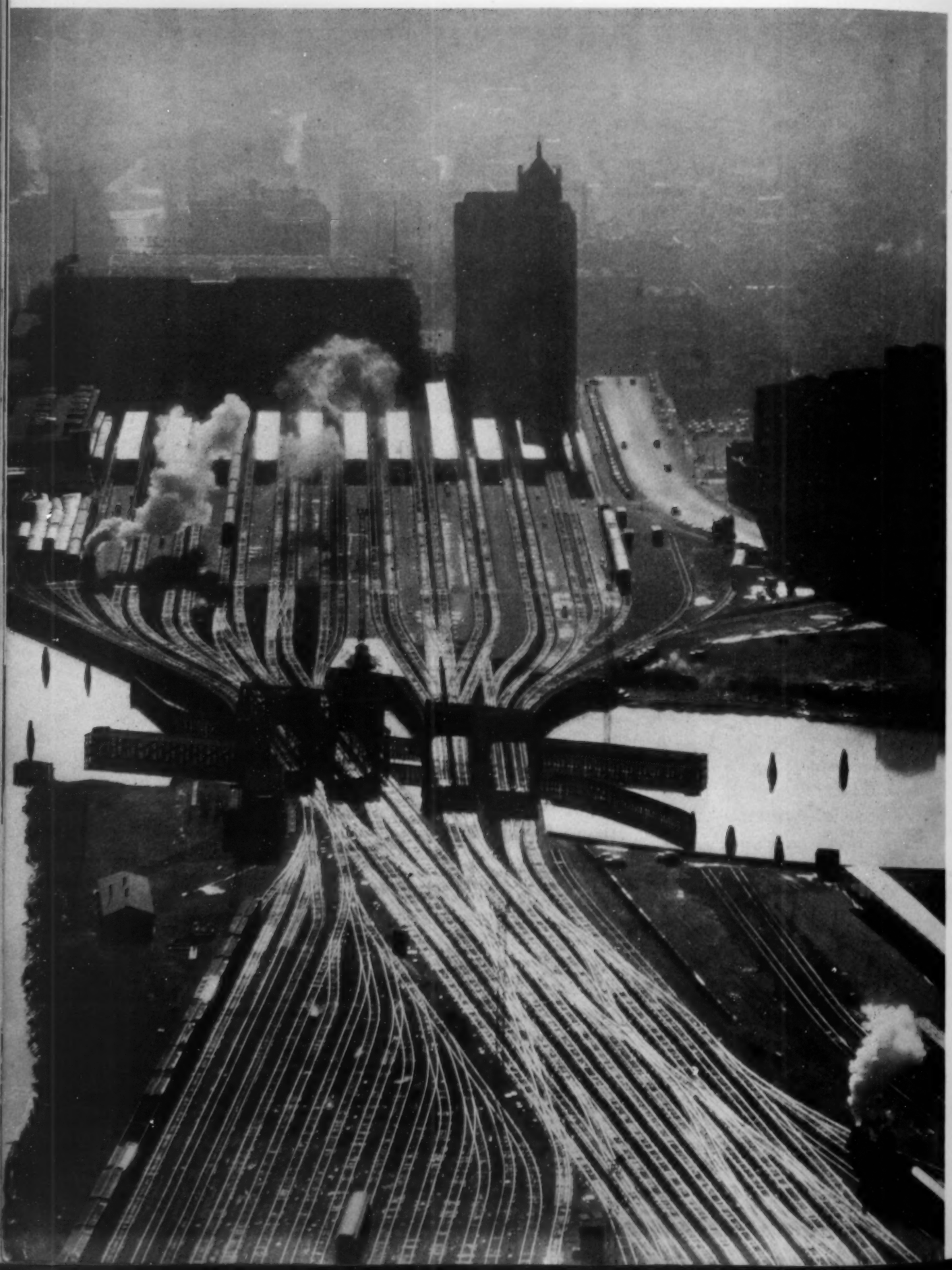
LIGHT COVE DETAIL



The area behind the corrugated glass panel at right houses the general accounting offices, vaults and safe deposit department. Light is admitted through panel and through the corrugated glass walls immediately behind the tellers

RAILROAD BUILDINGS

Laurence Lowry Photo



THE ARCHITECTURE OF RAILROADS

Courtesy New York Central System

"Come all you rounders, for I want you to hear,
The story of a brave engineer,
Casey Jones was the rounder's name,
On a big eight wheeler of a mighty fame. . ."

NO COUNTRY in the world owes as much to Casey Jones and his big eight wheeler as do the United States of America. And no architects in the world owe as much to the railroad as do the professional descendants of William LeBaron Jenney, whose early steel frame buildings, constructed of the structural steel sections first developed as railroad tracks, made possible the American skyscraper. The architecture of railroads — of stations, of engine sheds, and of railroad bridges — is, in America, a true and original part of our cultural heritage.

What has happened to this great tradition? Did it bog down in the economic depression of the thirties, that nearly broke American railroads? Are there signs of its revival in their startling and sudden economic recovery during the past few years? Is there any evidence that the shiny rail of steel, once the mainspring of our new architecture, will again help rejuvenate the art of building?

The Spirit of the Railroad

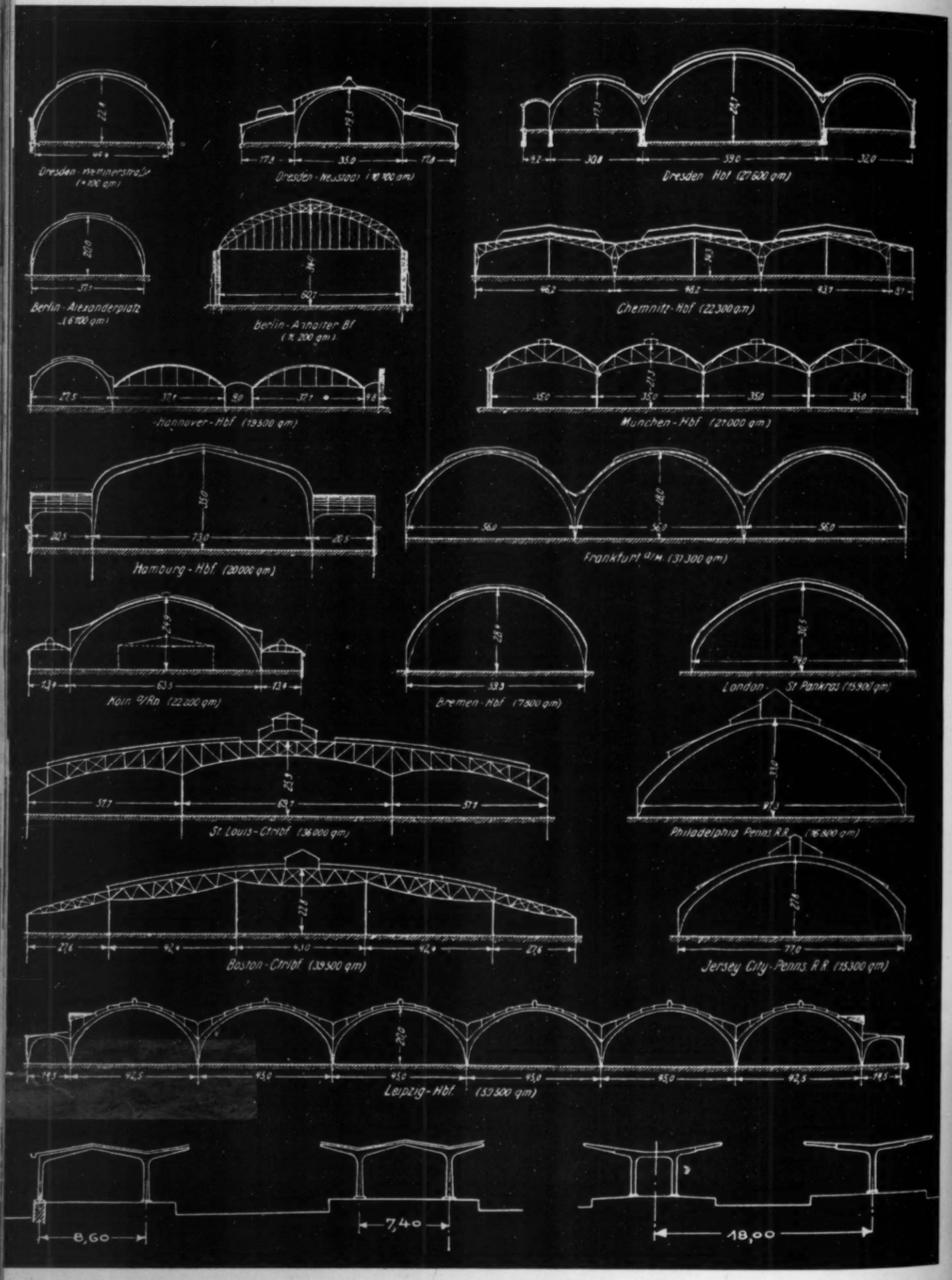
Ever since the first railroad train rattled through our land men have held romantic notions about this strangely unbeautiful thing. These notions held a very special quality of romance, for there was nothing pretty about the sooty, grimy steel monster; it was always gross, ugly, and endowed with an ear-splitting grind and a nerve-slitting squeak. But it was a thing of power, of grandeur, of all the crude glory of the vulgar age of the mechanical. And in America Walt Whitman, a connoisseur of vulgarity, wrote an ode to a locomotive: he knew that this monster, born in the Old World, held within it the passionate pulse of the New.

It is not strange, then, in looking back upon the hundred-odd years of railroad architecture that most of it has had about it a romantic streak. Some of this romanticism was Gothic; some of it Romanesque; some railroad stations were built to resemble medievel castles; others to invoke — probably to be on the safe side — the connivance of the Deity. In more recent times romanticists like Eric Mendelsohn have sketched railroad stations to resemble "frozen music." Only in the most recent past, when the smoky monster became a sleek, smokeless and often electric space machine, have architects produced neat and clean public buildings, pretending to be neither temples nor wind-tunnels, neither castles nor cathedrals, but, simply — stations.

The Architecture of Railroads

Basically there are only two types of railroad stations: the terminal, and the intermediate stop. Some of them may load passengers; others may load freight; still others may do both. Some will be small whistle stops — little more than a short concrete platform, with a stationmaster's house in the middle; others will consist of vast halls, spanned by daring steel and glass vaults, and harboring dozens of long platforms, waiting rooms,

A representative selection of engine shed types, from Wasmuth's Baulexikon. All dimensions are in meters


Dresden - Wettinerstraße (4100 qm)
Dresden - Neustadt (10100 qm)
Dresden Hbf (27600 qm)
Berlin - Alexanderplatz (16700 qm)
Berlin - Anhalter Bf (11200 qm)
Chemnitz - Hbf (22300 qm)
Hannover - Hbf (19300 qm)
München - Hbf (21000 qm)
Hamburg - Hbf (20000 qm)
Frankfurt a/M (37300 qm)
Köln a/Rh (22200 qm)
Bremen - Hbf (7900 qm)
London - St Pankras (15900 qm)
St Louis - Ctrlbf (36000 qm)
Philadelphia Penns R.R. (16500 qm)
Boston - Ctrlbf (39500 qm)
Jersey City - Penns R.R (15300 qm)
Leipzig - Hbf (53500 qm)
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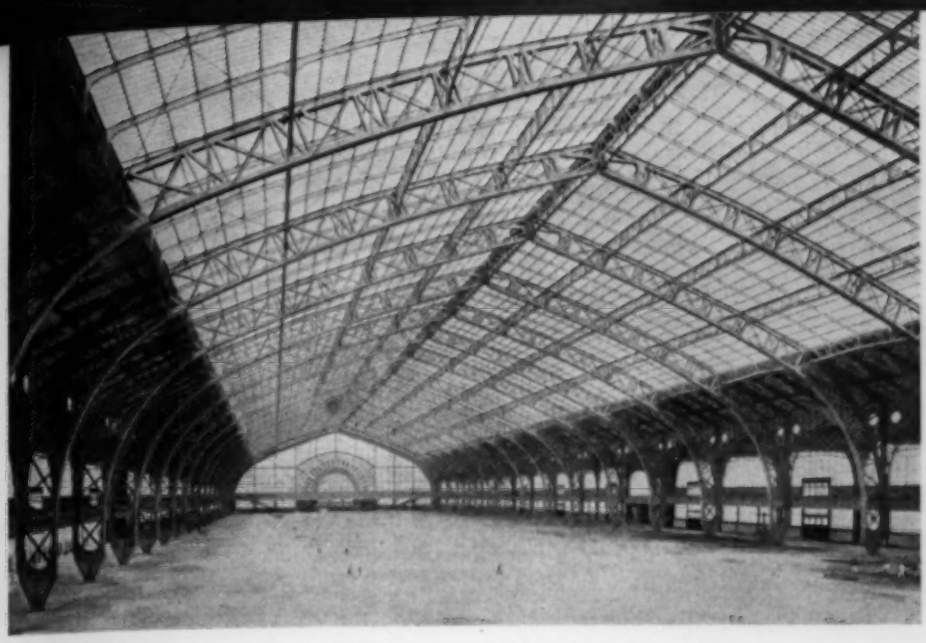

Bauen in Frankreich, Eisen, Eisenbeton—Giedion

1

THE GREAT SPAN

(1) Hall of Machines, Paris, 1889; (2) King's Cross Station, London, 1852; (3) & (4) Grand Central Station, New York City, 1871; (5) Central Station, Milan, c. 1930

Country Life, London

ticket offices and baggage rooms; all connected by ramps, escalators, freight and passenger elevators; all fed by subways, bus and trolley lines, taxi lanes, truck convoys — and, possibly, even by airplanes. Such vast traffic centers stretch out their tentacles over many square miles of urban land, and decisively affect the plans of cities, the spread of industries, and the lives of those within their radius of influence.

Yet however complex a railroad station may become, its planning will closely reflect the "flow diagram" of its functions. Mart Stam's project for a station at Geneva-Cornavin (page 127) shows this very clearly. It is not here that the architecture of railroads presents a problem to an able organizer. Rather, it is in the esthetic expression of the essentially modern character of rail-bound transport that the architects seem to have hit a snag.

In most of the large stations, there is a clear architectural division into two building elements: one, the large vaulted hall covering the many platforms; and, two, the "architecturally treated" outer building, containing waiting rooms, lobbies, ticket offices and the like, and presenting a deceptive façade to the outside world. The first of these elements was generally designed by engineers; the second, by deluded esthetes. An exception — and a remarkable one — is London's King's Cross Station designed, in 1852 (!) by Lewis

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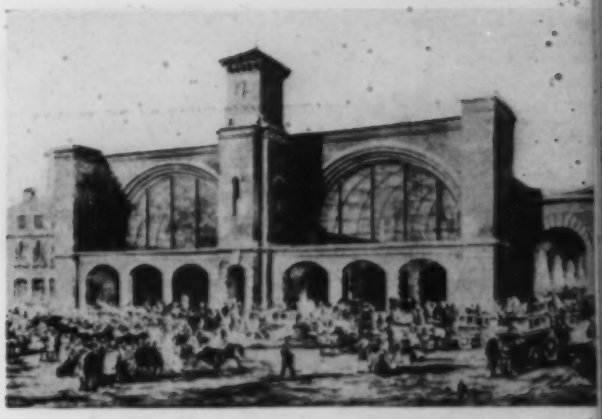

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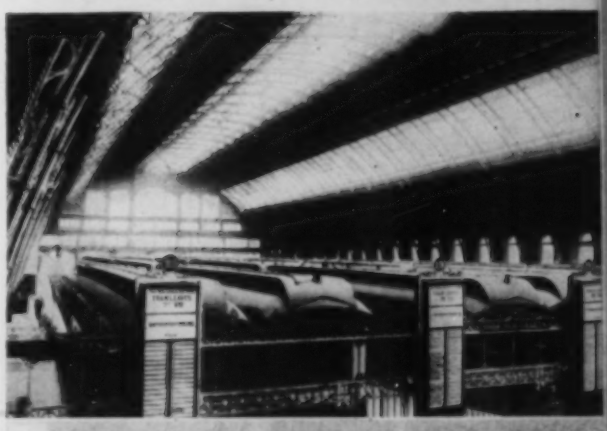

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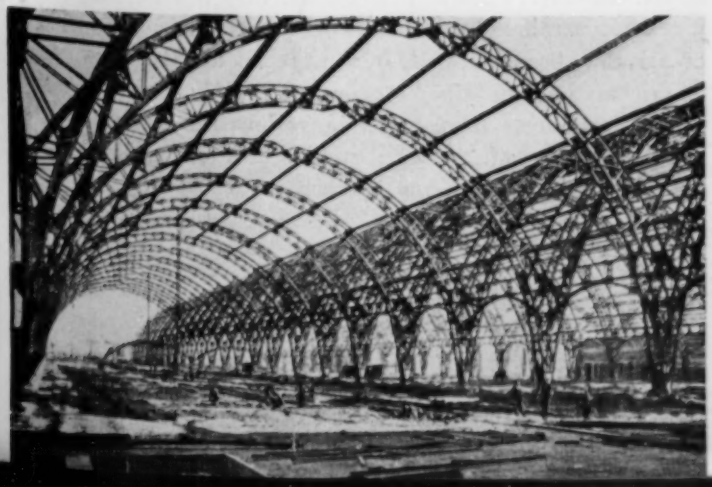
New York Central Systems

Architectura Moderna



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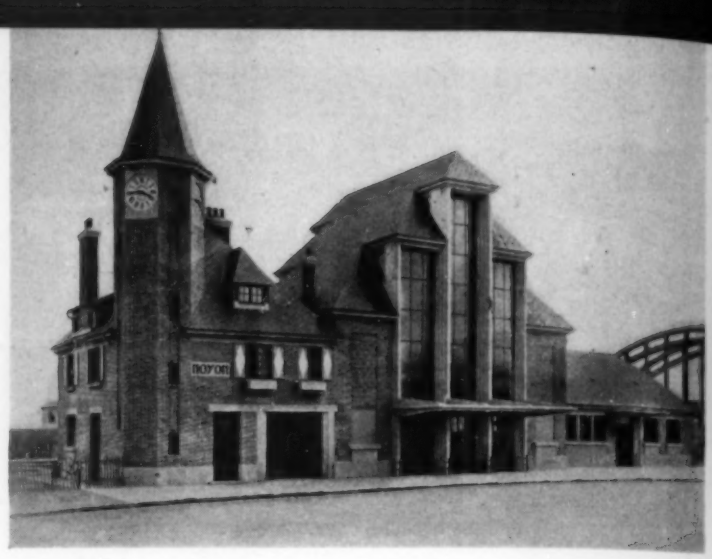
(6) Station at Noyon, France (date unknown); (7) Multi-level station, Antonio Sant'Elia, 1914; (8) Sketch for a Railroad Station, Eric Mendelsohn, 1914; (9) Stuttgart Station, 1914–27; (10) Moscow Station, 1935



Encyclopédie de l'Architecture, Éditions Albert Morance, Paris

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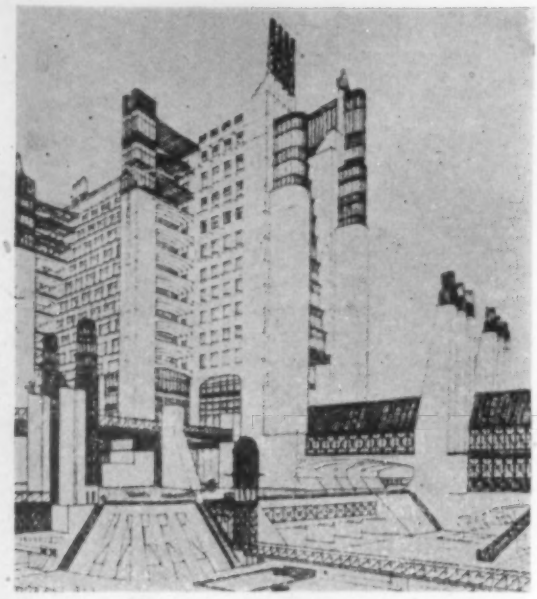

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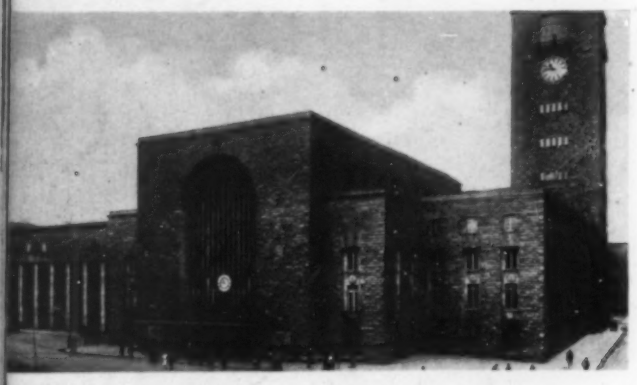

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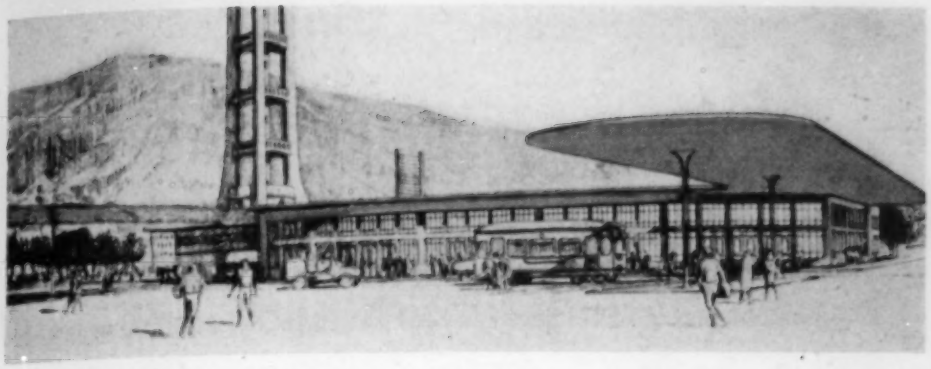
Cubitt who, being an engineer, felt free to design the entire station as one functional unit, whose façade is expressive of the large-scale vaulting behind it. But in most cases architects designed the outer portions of stations, while engineers designed the steel vaults. It is the latter aspect of station architecture that, today, seems to us to have had real architectural and esthetic merit.

The demand for these great spans to cover a number of parallel railroad tracks and engine sheds produced many beautiful examples of steel and concrete engineering. Depending largely upon the size of the spans required, arched trusses, two- or three-hinged, and rigid steel girder frames have been in extensive use from the middle of the last century to the present (see First Grand Central Station, 1871). Though many of the early arched trusses were unduly heavy — having been designed by people whose eye was still trained to the proportions of stone-arches — recent examples used extremely light bow-string trusses, whose tension members consist of thread-like wrought iron rods. The trend in very recent railroad architecture, however, has been altogether away from the large vaulted hall, toward individually covered, parallel platforms. These platforms are generally protected by cantilevered canopies, supported only at the center and constructed, more often than not, of reinforced concrete rather than steel.

Modern engineers, by and large, have been able to resist the romantic impulse and have — depending upon their individual ability — stuck fairly close to pure forms. However, some architects have been striving for a conscious railroad esthetic, whose outgrowths have occasionally been fantastic. In what seems to have been an uncommonly sustained stupor over Mr. Watt's little gadget, architects have tried, in various unfortunate ways, to blow off esthetic steam. An unidentified Frenchman evidently found himself reminded of wed-



Bauen in Frankreich Eisen Eisenbeton — Giedion

11

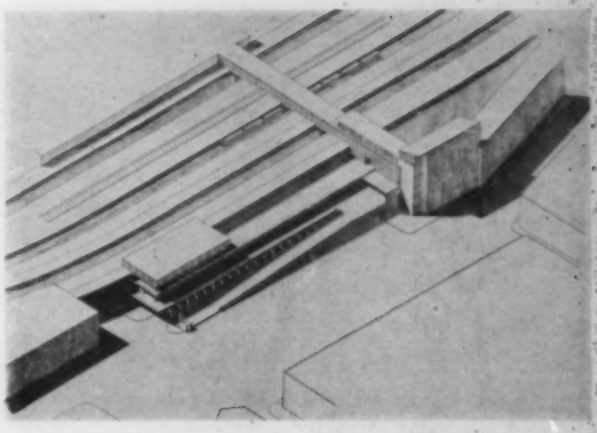
(11) Station Project, Tony Garnier, 1904; (12) & (13) Project for Station at Geneva-Cornavin, Mart Stam, 1924; (14) Project for Brussels International Station, Victor Bourgeois, (about) 1930; (15) Project for Central Station, Brussels, Victor Bourgeois, (about) 1930

12

ding cakes; Antonio Sant' Elia, a futurist, was patently intent upon telling God about it — and upon getting within His earshot to do so; Eric Mendelsohn's sketch, though expressing a truly architectural concept, looks as aero-dynamic as the *Super Chief* — which, in stations (that ought, perhaps, to be stationary) suggests extreme confusion; the well-known, and now sadly blasted Stuttgart Station carries neo-Romanesque grandeur to the point of gloom likely to discourage pleasure travel; while the Moscow Subway Station, though presumably in the new "Stalin Style," does not seem to have made up its esthetic mind — a good thing for fun-loving architects in a land of switching party-lines.

Rational Esthetics for a Rational Industry

Despite some of these romantic tangents, clean, honest structural designs for railroad stations have been prepared by some architects from the start. One of the earliest 20th Century examples is the station designed in 1901–04 by Tony Garnier in reinforced concrete. It is remarkable not only for its clean appearance and its clear functional organization, but also for its daring use of thin reinforced concrete slabs, cantilevered over



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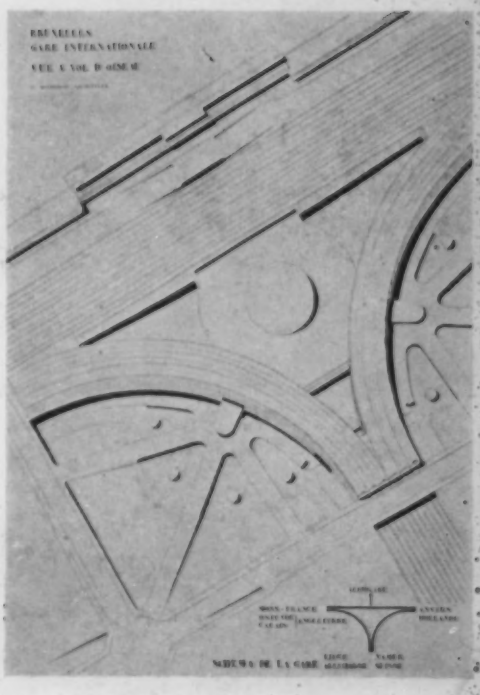

13, 14 and 15: Neuzeitlicher Verkehrsbau

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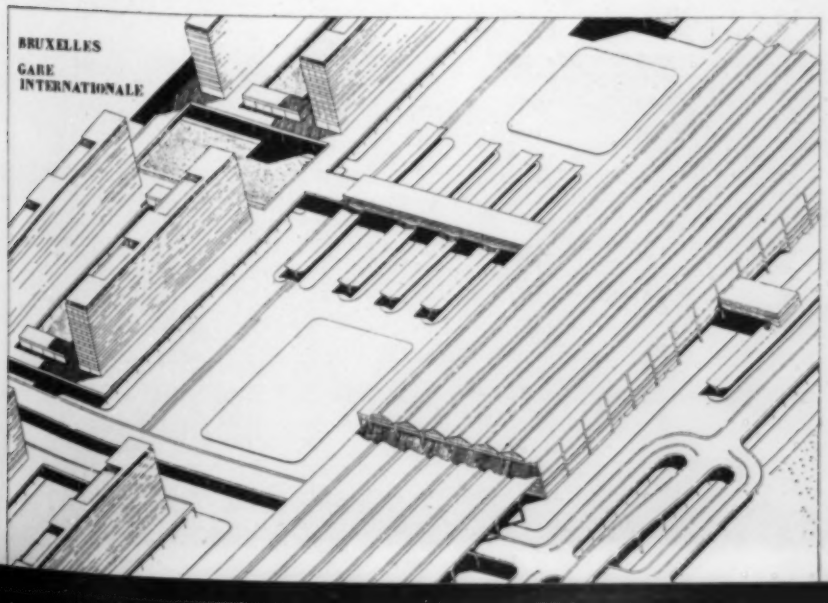

(16) Stratford, Conn., Station, 1867; (17) Wiesbaden-Biebrich Station, (about) 1928; (18) Trolley Car Shelter, Stockholm, Sweden, (about) 1934; (19) Covered Platform, Amstel Station, Amsterdam

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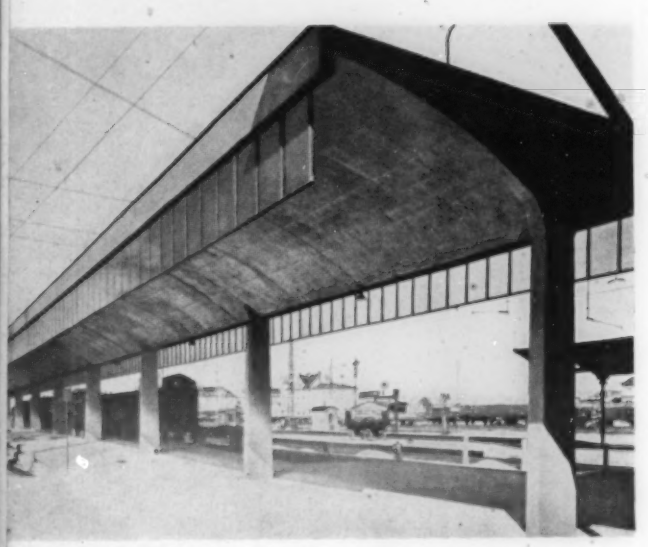
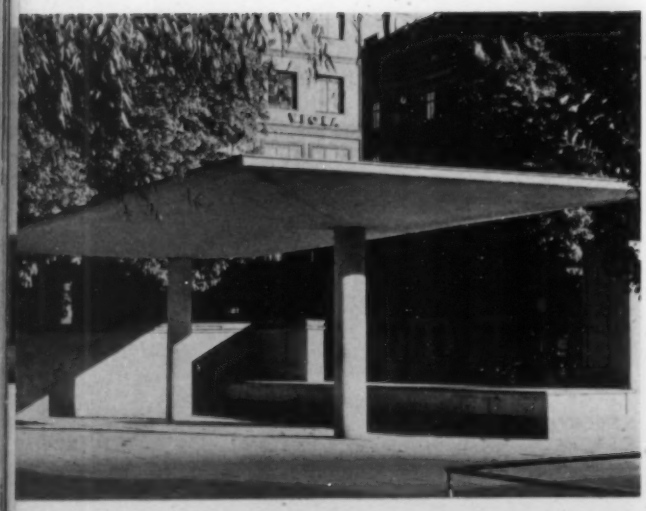


17

Neuzeitlicher Verkehrsbau

platforms in a manner that only now, almost fifty years later, is becoming generally accepted. Though there are still a few minor Art Nouveau details, this project by Tony Garnier can hold its own against the best of the most recent crop of such designs. More than two decades later the Dutch architect Mart Stam designed his station for Geneva-Cornavin. Here again the emphasis is upon clean, reinforced concrete and glass, upon cantilevers that permit uninterrupted access to trains, and upon a functional expression of the station's flow diagram. Most interesting, perhaps, is the use of ramps to connect different levels, and the departure from the large, single-vaulted hall in favor of the parallel, individually covered railroad platforms. Around 1930 Victor Bourgeois designed two stations for Brussels: the Central Station shows certain organizational similarities to that of Mart Stam, though the massing of the principal units and their detailing seems more sophisticated; the scheme for the International Station introduces an interesting idea by joining rail and road transport to air traffic. To allow for separate access to all these facilities, Bourgeois used an intricate system of ramps and overhead passages, somewhat reminiscent of Antonio Sant' Elia's futuristic scheme (in 1914) for intersecting level traffic (see page 126). Thus the work of the romanticists, despite some of its aberrations, did make its valuable contribution to more realistic projects that followed.



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G. E. Kidder Smith Photo

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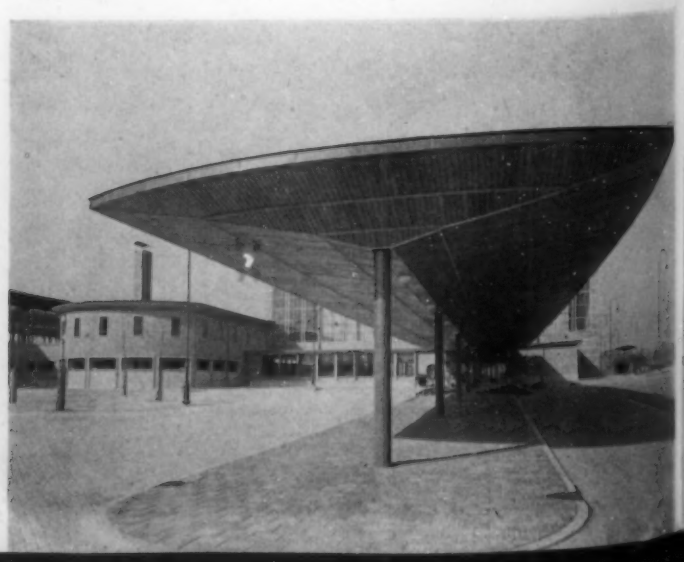

Rationalism and the Whistle Stop

It is a far cry from Victor Bourgeois' Rail-Motor-Air Terminal to the shed-like minimum facility of the whistle stop. But just as certain modern artists have returned to the simplest basic shapes in order to bring a new unity out of artistic chaos, some architects in recent years have concentrated upon the redesign of elementary structural units in order to progress, from these, to a new evaluation of larger structures. Edward Henry's painting of the Stratford, Conn., station in 1867 shows a simple wooden structure, conceived perhaps as just another house, but unpretentious in its expression of wood truss construction. The fact that such sheds were combustible soon led to the exclusive use of iron and concrete for railroad construction.

We have seen Tony Garnier's daring reinforced concrete canopies. In the Wiesbaden-Biebrich canopies the effect is still rather heavy, though a section reveals the roof slab to be very thin. Not until we get to the beautiful trolley-car shelter in Stockholm, built over thirty years after Tony Garnier's project was designed, is there any realization of the Frenchman's daring and prophetic idea. The canopies of the Amsterdam-Amstel station — which is covered in detail on pages 136–137 — were designed in 1938; they show, perhaps, an even further refinement and the introduction of a simple decorative motif, typical of "new empiricist" architecture today.

In Great Britain, where the postwar nationalization of transport under the Labour Government has resulted in a flurry of excellent new railroad designs, a number of handsome little stations have been constructed recently. Similar in spirit to Lester Tichy's American prewar designs (see photo) are such fine island buildings as the one at Marsh Lane Station; these and other British examples show the logical next step in the hierarchy of railroad stations — i.e. the small intermediate stop.

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"Topical" Press Agency, Ltd. Photo
(Copyright London Transport Executive)

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Stewart Bale Ltd. Photo

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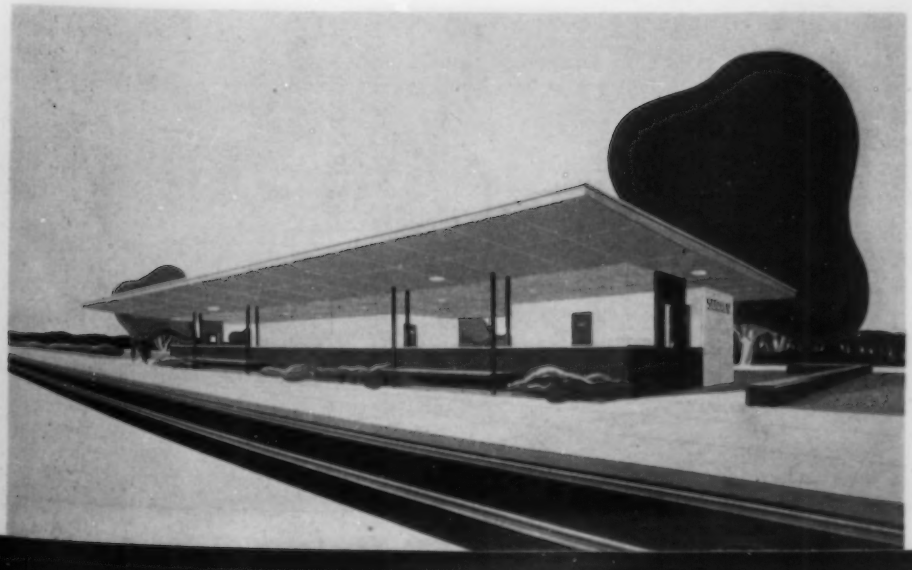


(20) Oak Wood Station, London Passenger Transport Board; (21) Marsh Lane Station, British Railways; (22) Project for Prefabricated Station, Lester Tichy, Architect

RAILROAD ARCHITECTURE IN EUROPE

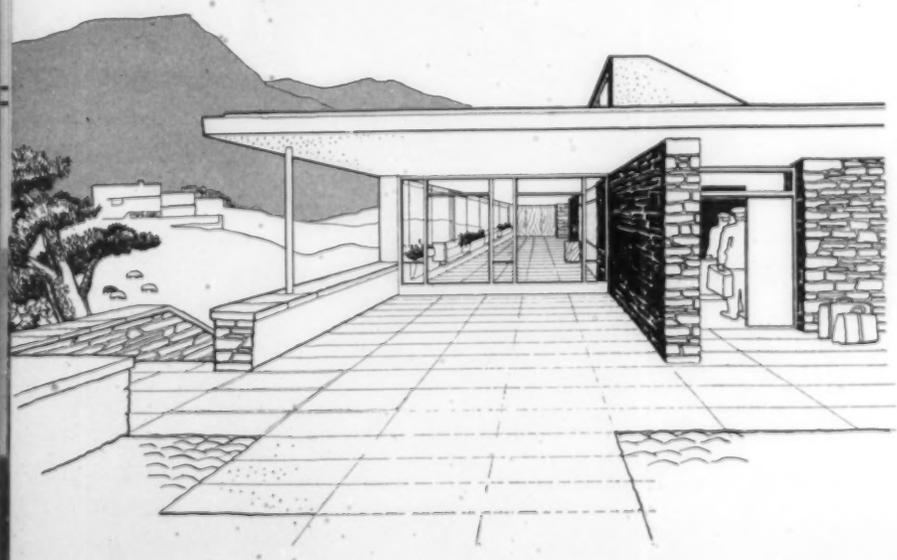
By J. L. Martin

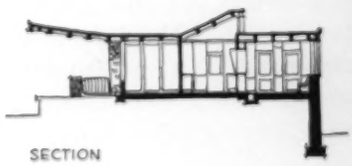
THIS short article cannot pretend to deal with the subject in a comprehensive way. To do that it would have to refer to a far greater number of buildings. It would have to make some reference to those developments in design and esthetic theory which are stirring in so many European countries. It would also have to take into account all the differences of background, and the influences which give the railways of each particular country so distinctive a character.

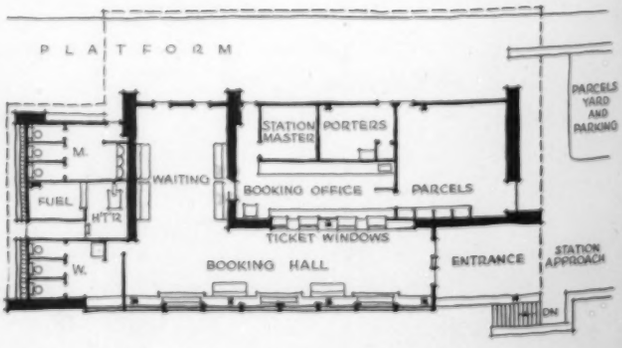
To emphasize this point, it is only necessary to call to mind one or two outstanding contrasts. There is, for example, the sturdy regionalism of the early British Railways which showed such a marked influence on their architectural character. There is the typical French regard for the station as a "*monument publique.*" There is the Swiss habit of using the station as rather a pleasant meeting place. Then there are all the differences of operation and detail — for example in Great Britain the simple informality of taking a ticket or dealing with baggage, the traditional direct road-rail connection at terminal stations made possible by the collection of tickets "*en route,*" the overbridges, underpasses and fencing which contribute so much to the character of a British station, and serve to distinguish it so clearly from its counterpart in continental Europe or the U. S. A.

These contrasts, and their social and economic background, form part of a fascinating study. A short article of this kind cannot even touch upon such a broad treatment. It consists rather of a series of notes on one or two lines of development which are being followed up in connection with railway station designs in Europe — and more particularly with those types of development which may have interest for American designers.

Although the subject is a broad one, it can be divided conveniently into three main sections of work: first,







Section, plan and perspective view show typical British station under the new program. Native materials are used to relieve possible monotony resulting from standardization

the smaller station building; second, the larger station; and, third, the remodeling and improvement of existing buildings.

I. SMALLER STATIONS

In two European countries at least, Great Britain and France, the problem of rebuilding smaller stations has become something more than the straightforward problem of individual buildings. The smaller buildings that are required in these countries are numerous.

In England the reason for this is a matter of history. The early, and unbelievably numerous competitive companies developed an intensive network of lines and stations which is without parallel. The stations differed widely from each other in architectural character; many of them have now reached a considerable age — some are too large for their present traffic, others too small. Most of them are difficult and uneconomical to maintain.

In France the need for remodeling and rebuilding stations has been increased by war damage. In both countries therefore, it is not a question of putting up one or two individual buildings. It is a question of dealing with programs. In both cases it is possible to obtain a total economy through some form of nationalization of requirements and construction.

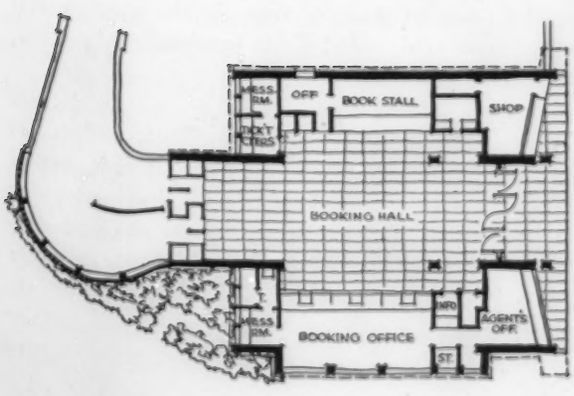
This is a problem which does not appear to have presented itself in the U.S.A. The outstandingly satisfactory stations at Burlington and La Crosse by Holabird & Root, or Lester Tichy stations for the Pennsylvania Railroad are clearly and quite justifiably individual buildings. In England it is true we have before us the example of the London Passenger Transport Stations, built before the war, where a remarkable unity of treatment is maintained by a consistency of finish.

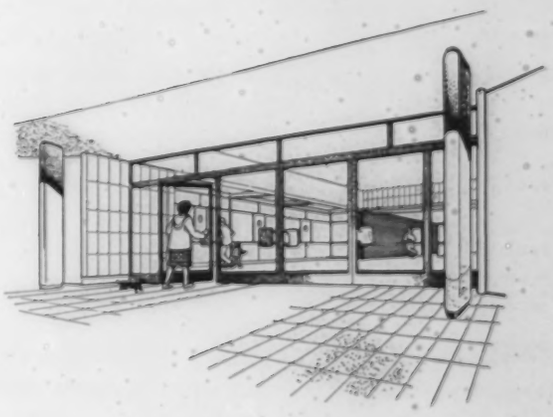
The L.P.T.B. (now London Transport Executive) with its program for opening up new electrified suburban lines was almost bound to consider buildings in series. Its fine policy and standards have incidentally made possible a rapid start on postwar schemes, and already the Central London line has been extended in both eastern and western directions. This extension program, which began immediately after the war in 1946, already has produced three new stations and a number of conversions to the east (designed by the Architect to the L.T.E., Mr. Bilbow) and two new stations below ground by Adams, Holden and Pearson, one of which, Gants Hill, achieves the considerable engineering feat of driving a large underground concourse between the two subway lines. To the west, three new stations, the work of Mr. Curtis, Architect to the Western Region, British Railways, are under construction.

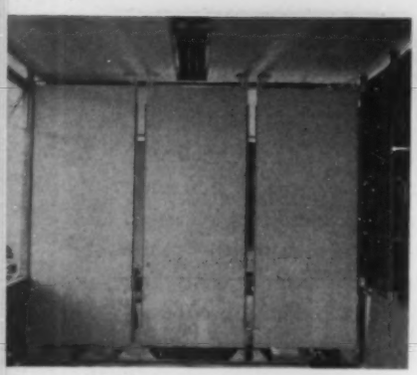
But though these ranges of buildings in the London area form important programs in themselves they hardly can be taken as a guide to the methods that may have to be used in dealing with the large number of buildings with widely different requirements to be constructed in all parts of the country.

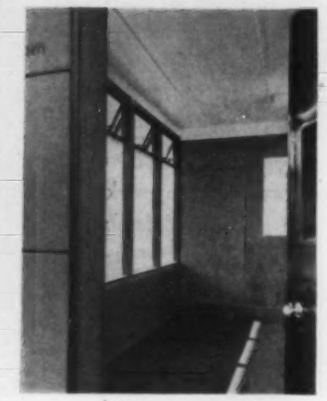
Several lines of approach to this problem are possible and can be justified by different conditions and circumstances. In France, for instance, the S.N.C.F.

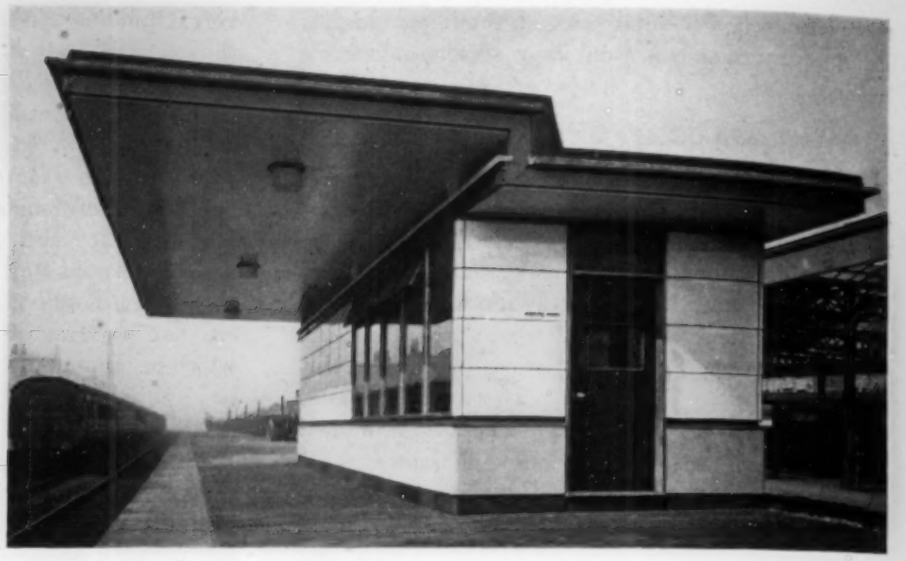
Pleasant and clean design such as this is intended to turn British stations from grimy, unpopular stop-overs into real community buildings. Note how the plan permits easy circulation and free access to all services





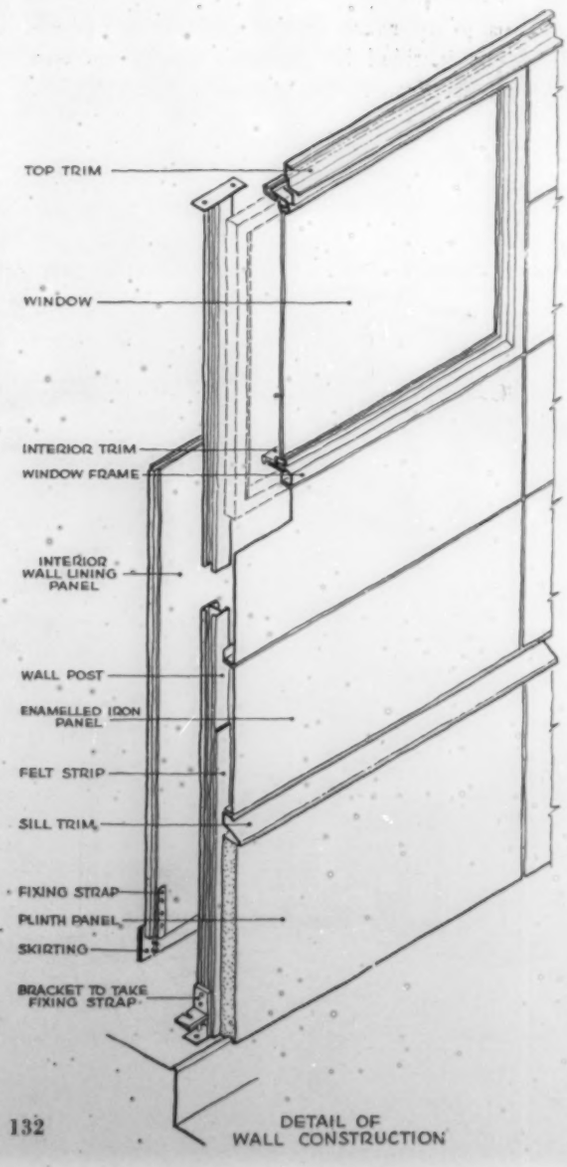






Dell and Wainwright Photos

Experimental station building at Queen's Park is prefabricated in enameled iron panels. Interior walls are also assembled in section. The raised cantilever roof is an attractive tour de force



DETAIL OF WALL CONSTRUCTION

has given consideration to the standardization of interior layout for all small and medium-size stations. This layout will vary only according to the size of station to be rebuilt, and although certain recommendations are made to avoid excessive cost the principal aim has been to leave the general architectural treatment as free as possible.

On the London Midland Region of British Railways, however (where the problem is different for several reasons), experiments in developing Unit Stations which began on the London Midland and Scottish Railway are being continued. These experiments follow the principle of coping with a number of buildings, and securing economy through the repetition of similar parts. Although the individual components of the building itself have been standardized, there has been no attempt to produce standard plans for the buildings themselves; in fact, the very opposite is being required, and the whole object of the experimental work is to produce a building which can use similar parts but which can be completely flexible from a planning point of view. As this experimental work has now achieved definite results, it is, perhaps, worth describing in some detail.

The former L.M.S. Railway Company several years ago set up a Building Research Committee which has made a special study of the problem of unit station buildings. The use of some form of unit construction was clearly indicated from the start. It was obviously desirable, for example, to have parts manufactured away from the site, and easily handled and quickly erected on the site itself. The problem was to produce such parts in materials which could meet the stringent requirements

This small island building—also prefabricated of enameled iron panels—serves as a sheltered waiting room, with neatly designed wood-slat benches inside

of railway work. The wall required, for example, an impervious, easily cleaned and attractive finish above flow level; below flow level, a hard surface to resist damage from barrows was essential. It was desirable to obtain certain levels of insulation from the point of view of comfort and economy in heating. It was also desirable that the wall thickness should be cut down to a minimum.

These performance requirements were established after careful work on prototypes in the laboratory, and finally an experimental building was erected at Queen's Park near London. On this particular site it stood in a highly polluted atmosphere, and was adjacent to a fast traffic line and an electrified line so that its performance under severe conditions of vibration could be measured.

The experimental building designed in the office of the Architect to the Region, W. H. Hamlyn, has already been illustrated and described.[1] It is sufficient here to say that its main awning consists of steel columns which carry cranked beams running at right angles to the building. Between these cranked beams stressed skin plywood boxes form the awning, the roof being waterproofed by a felt membrane. Below this awning, wall posts are erected in the first instance, and the walling is then clipped into position. Externally, the building presents a flush surface which is easily washed down and in which bright color can be freely used in the areas covered with enameled iron.

The prototype building gave sufficiently satisfactory results to make further development worth while and since its erection a number of schemes have been worked out, and the first full-scale station now has been built at Marsh Lane near Liverpool. One of the most important single features arising out of this work has undoubtedly been the application of a system of dimensional coordination to the construction and planning. The materials used in the individual components may be changed — indeed, *should* be changed when they can be improved. The dimensional grid takes this possible variation of material into account, and will allow these changes to be easily incorporated as they are required without invalidating the flexibility allowed which is shown in the accompanying plans. It will be seen from these plans that they are all based on a grid. This grid has a module of 3 ft. 4 in., which proves to be the most convenient planning dimension.

From a planning point of view these schemes represent a considerable breakaway from the traditional station building, in which the platform acted as a kind of corridor from which the individual rooms of the building were approached. The number of rooms provided in traditional schemes was itself a reflection of a different social age: the segregation of ladies from the general waiting room was but a first step towards the further subdivisioning of first and third class. Separate rooms for all these various categories were commonly provided. This isolation of rooms is obviously unsatisfactory in present-day practice, and in the plans illustrated it will be seen that in various ways one single general waiting space replaces the independent waiting rooms.

This new freedom of planning leaves ample scope for the designer, and a considerable variety can be achieved.

[1] Architectural Review, March, 1946.

This variety has again been deliberately emphasized by various means including the introduction of local walling materials. (See also Lester Tichy's designs in the U.S. — *Ed.*) It is realized that the widespread use of a single range of materials in areas and settings which differ widely in character leaves an opening for criticism that cannot be easily waved aside. One of the principal interests in the older station buildings in Great Britain is the wealth of variety in their regional character.[2] This is an interest which it would be a pity to lose, and there is no reason why it cannot be maintained in some degree at least in the design of unit stations. It is felt that by various means such as the color and use of local materials, the prefabricated components may be more effectively related to their different types of setting, and that a contrast of materials can be obtained which might well enhance the qualities of both the local and the imported components.

It now seems to have been proved that the smaller station can have the necessary freedom of planning and design in spite of the utilization of similar components. This means that the following advantages can be obtained:

1. It is possible to bulk-order the parts of a number of different stations, and so secure economy.

2. It is possible to rationalize the production of working drawings; in fact, component and assembly drawings for any number of stations have already been built up.

3. As a result of the scientific tests carried out on the prototype and its components, a definite standard and quality for future building work can be laid down.

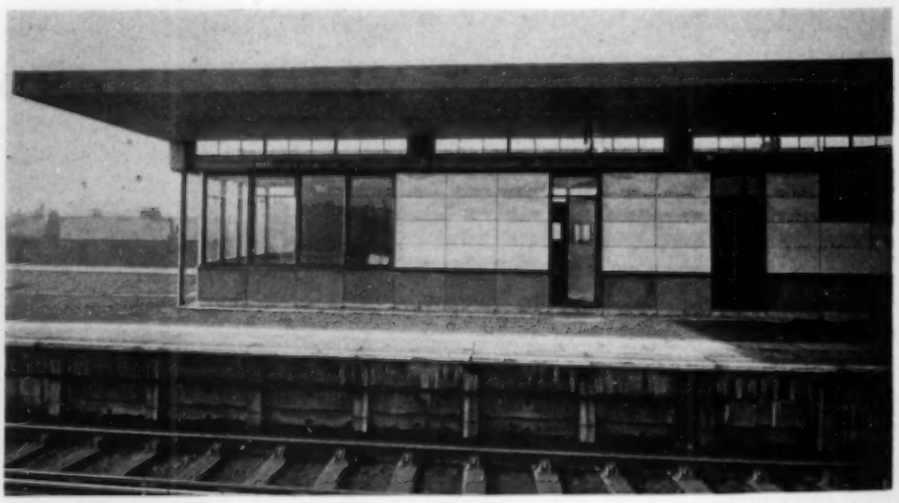
4. It becomes possible to make an effective organization for the erection of these buildings on the site, and to develop a maximum speed for this operation.

It is not claimed that the system applies to every station building. But it is interesting to find that even in individual buildings, advantage can be taken of standardization of units in various ways.

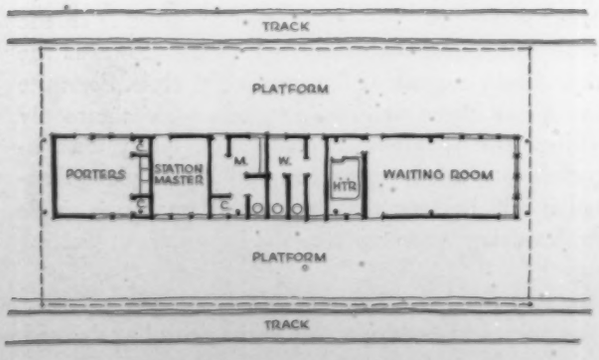
[2] Some of the reasons for this variety have been described elsewhere — see for instance J. M. Richards' article "Domesticating the Iron Horse" in the Architectural Review, June, 1942.

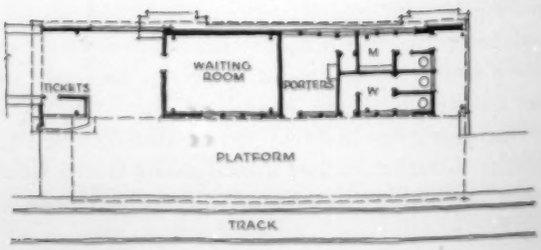
II. THE LARGER STATION

If any adequate picture could be given of the amount of major station rebuilding which has been projected, there is no doubt that it would be impressive. In Great Britain alone, consideration has been given to the replanning of many of the larger terminal stations. Although in France it has as yet been impossible to carry out any major station rebuilding, many studies have been made for the reconstruction of important stations destroyed or damaged during the war: thus at Amiens M. Pierani, Architect Head of the Estate Department of the French Railways, has collaborated with the



The prefabricated Marsh Lane Station again utilizes the raised cantilever canopy, which admits clerestory lighting to the platform. The lettering seems far too small for practical legibility—a common fault of British stations. Plans below show the flexibility of this prefabrication system





distinguished M. Perret, who is redesigning the Town Square; Calais Ville has also been designed by M. Pierani; Douai by MM. Mathon and Peirani; Lisieux by M. Camelot; Laon, M. Croize; Besançon, M. Madeline, and so on. Holland has fully developed rebuilding schemes for Leiden, Arnhem and Nijmegen. Belgium has a scheme for Brussels, and Switzerland provides the carefully studied 1946 project for the station at Zurich.[3]

The impetus behind the development of such schemes comes from various sources. In England, many of the terminal stations are old buildings, which, although still distinguished structures, can no longer cope with modern requirements. In addition to the need for rebuilding the older stations, war damage, as in the French stations and at Nijmegen or Arnhem, provides a further opportunity. Coincidentally, there is the influence of the awakening concern for town planning which has made itself so strongly felt throughout postwar Europe.

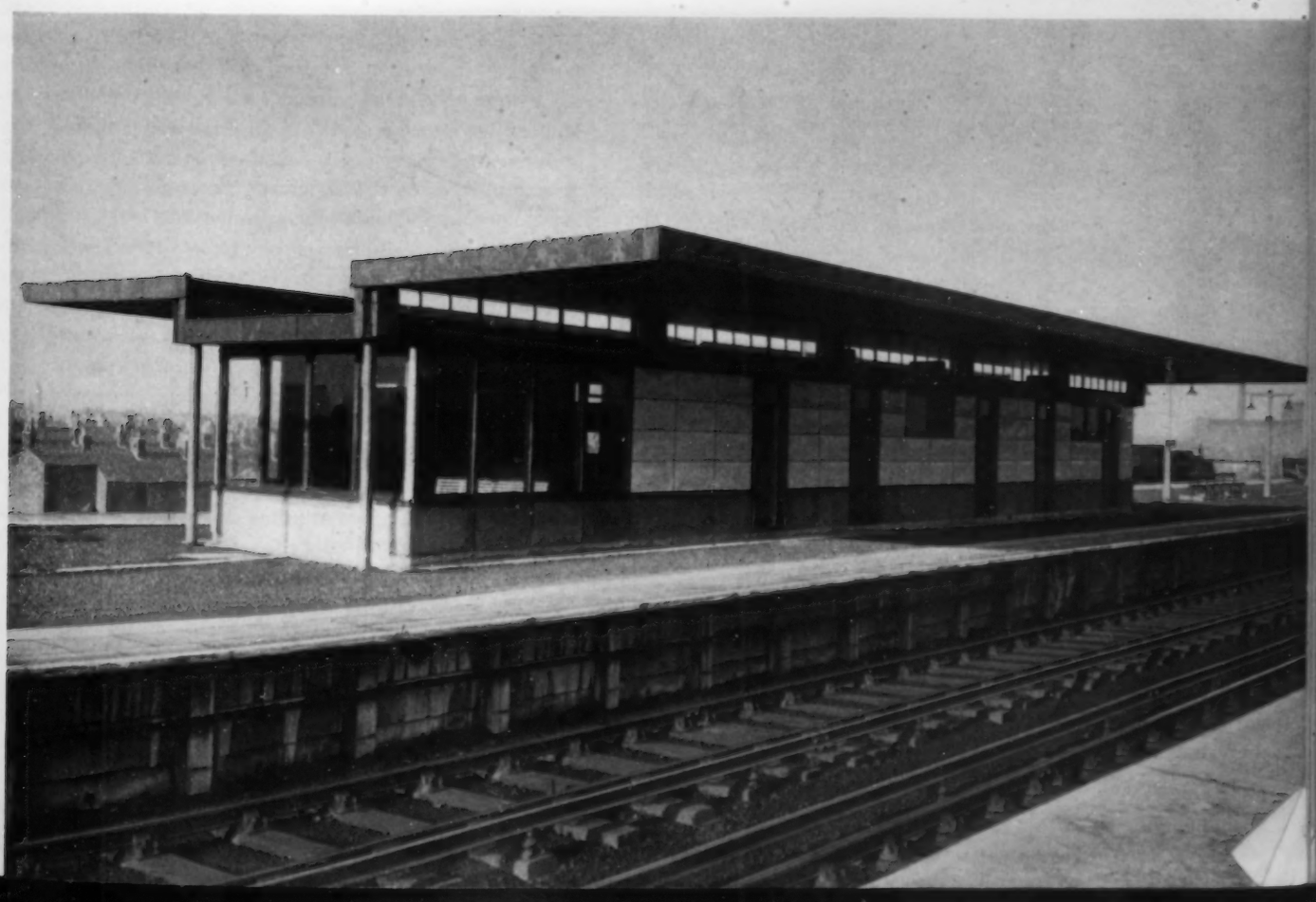
These factors have certainly engendered an activity in connection with station planning which is, perhaps, without parallel in opportunity since the days of extensive railway development. But although this activity has taken place, the plain fact of the situation (in France and England, at least) is that these schemes will, for some time to come, remain on paper. The shortages of both labor and materials, and the priority that must be given to housing have, for the time being, settled that issue.

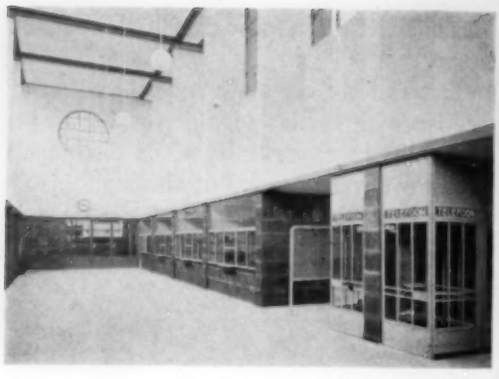
There is, however, some point in paper work which establishes more clearly the actual requirements, and there is no doubt, from the point of view of the designer, that there has been an important development in the preliminary studies which have accompanied many of these schemes. An attempt has been made, for

[3]See Schweizerische Bauzeitung, May 1, 1948.

The interior of Marsh Lane Station shows again the handsome seating units which have become standard in the new British stations. All interior surfaces were selected for ease of maintenance

Stewart Bale, Ltd. Photos





instance, to lay down standards for the provision of accommodation, and to state desirable sizes with some degree of accuracy. The exact requirements of a station are not easy to define in this way. The standards must allow, for instance, for widely varying numbers of travelers, and for the differing requirements of individual passengers. These studies of passenger movement and flow analysis have been considerably advanced by the work of the various Regions of British Railways. For instance, the work of the General Research Section of the London Midland Region has shown the proportion of passengers using the various parts of the station, and has demonstrated how this proportion varies with different types of station. The following comparison gives some idea of how the use of the parts of the station varies under different circumstances:

Proportion of Passengers using Facilities

	Ticket Office	Indicator	Bookstalls	Waiting Rooms	Toilets	Refreshment Rooms
Terminal Station	30%	62%	50%	10%	15%	20%
Interchange Station	4%	21%	16%	20%	19%	52%

A glance at these comparative figures will show just how important these studies are in establishing the planning of stations on a sound and economic basis. As a result of this type of work, it now seems possible to lay down diagrammatically the correct relationship of, for example, entrances, ticket offices, departure indicators; but in addition to this, the study of the movement of passengers has made it possible to relate peak numbers to the widths of passageways and staircases, areas of concourses, number of ticket windows, ticket barriers, number of lavatories, etc. There is no doubt that the application of this preliminary work, accompanied as it is by the development of prototypes for many of the separate items of the station will have a marked effect on the character and quality of future station building.

Some idea of what this character may be, can, however, be suggested. There are already in existence two stations in Amsterdam which are not, as yet, widely known, and which were guided in design by the careful preliminary study of detailed requirements. The two stations at Amsterdam (the Amstel Station and the Muiderpoort Station) were completed during the early part of the war by the Architect to the Dutch Railways, H. J. Schelling.

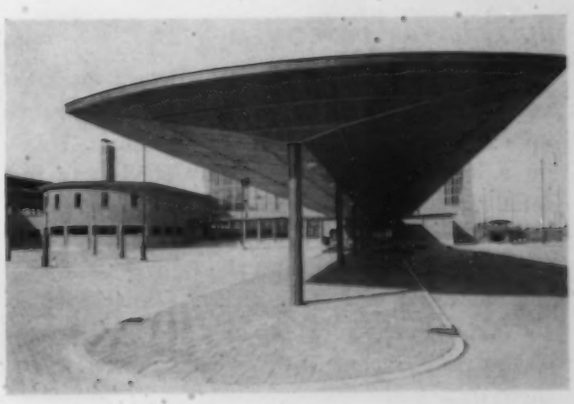
The Amstel Station perhaps illustrates best the main features of planning. An economically planned but

adequate concourse around which the main passenger requirements are centered forms the nucleus of the scheme. Passenger entrances are at one end of this concourse, which is enclosed by doors, and heated. Around the concourse between the entrances and the barriers to the platform subway are all the passenger requirements — ticket offices, timetable displays, shops, baggage rooms, telephones, lavatories, changing rooms, etc. The ticket barriers lead into the underpass from which there is a stairway connection to the platforms.

Architecturally, the concourse is a lofty glazed structure with adjoining single-story buildings. The strong Dutch tradition of the use of brickwork has influenced the external finishes. The Amstel Station exploits this in the use of light brick with raked joints (above a red Swedish granite plinth), and horizontal bands of glazed earthenware. The east façade is faced with French limestone. Internally, the main welded steel frames are left exposed, and are free standing from the roof plaster and glazed wall treatment. All underpasses are tiled.

A standard treatment is used for platform awnings, the main supports consisting of welded steel frames running at right angles to the track, and covered with purlins and narrow boarding.

The platform buildings themselves, as is the common practice on the Netherlands Railways, are faced with



The two Amsterdam stations shown here — the Muiderpoort Station (left) and the Amstel Station (above) — illustrate the current "new empiricist" trend in Western European architecture. Both emphasize a rather "human" touch, with pitched roofs, applied decoration inside and out, and with a somewhat casual architectural composition. Both stations were begun before the war, and completed during its early days.

hard glazed materials which can be easily cleaned. At Amstel the platform buildings are tiled up to the sill level, and paneled above with structural glass.

One or two special features of this station should be mentioned. The first is the careful study that was given to the correct type of doorway for use of railway stations. Each door is separated from its neighbor by a glazed panel which allows for the sideways movement of the passenger passing through the partly opened door. The distance between outer and inner doors is carefully gauged, and laid down as a standard. A second feature is the development of the ticket window, in which the passenger speaks through a stretched membrane mounted in a circular frame in the glass of the ticket office front. The tickets and cash are exchanged between passenger and reservations clerk on a small sliding tray. The reservations office is a self-contained unit, cut off from all air movement from the concourse itself.

The station at Muiderpoort is a simpler, but equally striking version of the principles demonstrated in the Amstel Building, which together form not only important contributions to the fine architectural traditions of Holland, but also distinguished additions to the architecture of the Railways. In passing it should be mentioned that the Dutch Railways have also provided scope for Mr. Van Ravensteyn's personal experiments in architectural form.[4] The remodeling of Utrecht Station, carried out in stages and finally completed in 1940, and two signal boxes in particular illustrate the preferences for curvilinear forms and individual fantasy which are associated with the name of this architect.

III. RAILWAY IMPROVEMENTS

Probably one of the most important tasks that railway architects have to face is that of improving the appearance of all railway surroundings. This applies on a large scale in the railway sheds and incidental buildings of the railways.

The French review *Urbanisme* in September, 1943, devoted a special number to the railways and their relation to urbanism. In a series of articles, officials of the S.N.C.F. and others presented a brilliant statement of the problem and provided an impressive record of their own policy and achievements. The relation of the station to the town, the effect of the railways on landscape, the appearance of its bridges, its overhead electrification, in fact, the whole of its external aspect has received careful thought. The General Managers of the S.N.C.F. and particularly the two managers who were successively in charge of the technical department of Fixed Installations (MM. Porchez and Robert Levi) are to be congratulated on their efforts in this direction. Any travelers from Calais to Paris today can see the effect of this considered policy. They will also see the two great engine roundhouses at Longueau and that at Creil (at present under construction) which are part of a general program of some twenty schemes by means of which the face of the French Railways is being changed.

The reconstruction of these engine sheds, which have not been widely illustrated, deserves some special mention on account of their distinguished character. Together with bridges and marshaling yards, reconstruction of engine sheds presented immediately after the war one of the most urgent problems which the French Railways (S.N.C.F.) had to face. The roundhouses themselves were designed by M. Paul Peirani (of the French Railways) in collaboration on the engineering side with M. Bernard Lafaille. Due to shortages of timber, steel and bricks, the buildings are largely constructed of reinforced concrete so that they continue the great tradition of experimental concrete work which the French Railways have so finely established.[5]

It was considered that the roundhouse with its exterior wall of glass, provided the most efficient means of housing locomotives. There remained, however, the problem of smoke extraction and the standardization of a constructional form to meet the different numbers of engines to be housed.

The second of these problems has been tackled by the standardization of two main types of building, one with a radius of 218 ft. for 44 engines, and the other taking 32 engines with a radius of 176 ft. A smaller number of engines can be housed by building a section of one of these roundhouses: this meets the immediate problem economically, and allows for easy extension.

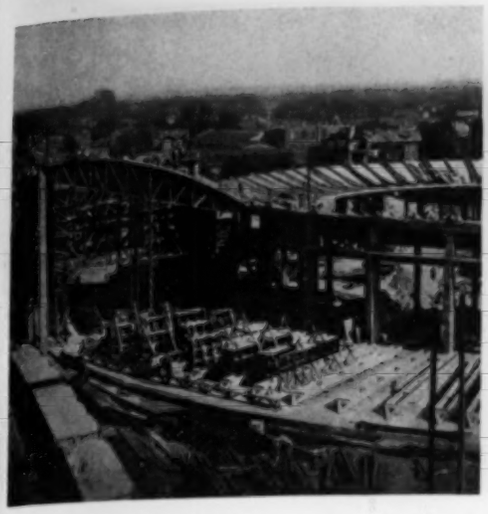
The question of smoke extraction has been ably solved by vents in the main roof, and specially suspended smoke extractors over the smoke stacks of the locomotives themselves. By means of these roof vents and extractors, the smoke is carried away to a continuous ventilation around the top of the external wall.

Among the buildings to be reconstructed by the S.N.C.F. special mention should be made of the program of signal and point boxes and of the interesting study of railway workshop and shed roofs which M. Peirani has carried out in collaboration with the engineer M. Vallette, Head of the Department of Construction Work, S.N.C.F., and M. Mesnager, Consultant. The most recent of these sheds, outside the Gare du Nord, Paris, illustrates an important development of the concrete roof which enables a double-sided lighting to be arranged. M. Peirani has thus moved away from the restricted daylighting of the typical north light roof, and has ingeniously produced a type of lighting which is particularly suitable for railway work.

In addition to railway surroundings of this kind, there still remains the problem of remodeling many of the existing station buildings. It is to be remembered in these cases that remodeling work usually arises when the building structure is reasonably sound, but probably inadequate or uneconomical for use at the present day. From the designer's point of view this raises the

[4] Architectural Review, April, 1948, p. 56.

[5] The all-concrete station at Rheims (replacing the building badly damaged by shell fire in the 1914–18 war) with its ingenious overall roof, is now some 15 years old. Started in 1932 for the Chemins de Fer de l'Est and constructed from the designs of S. A. Enterprises Limousin, it was an outstanding though by no means the only fine experiment in concrete work.



difficult problem of bringing a sense of convenience and order into a large number of buildings in a way which can retain something of the individual character of the buildings themselves.

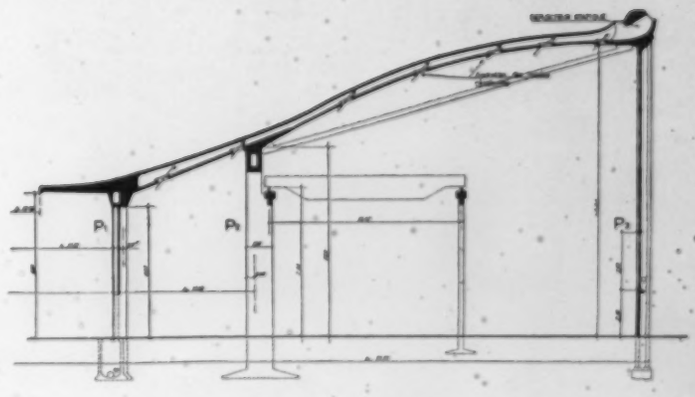
The principal advantages to be worked for are an improved layout of accommodation and equipment, improved economy by the removal of redundant areas and the substitution of materials involving a minimum of maintenance and an improved appearance.

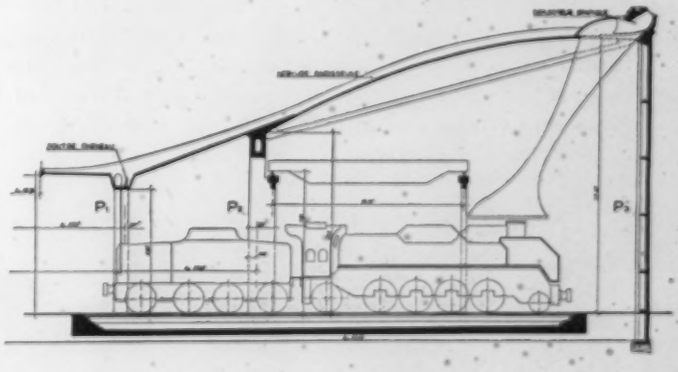
The question of appearance is tied up with the design of innumerable details. Although each individual detail is small in itself, it may require, as it does in the case of the ticket window, an intensive study. The task of dealing with this type of problem consistently throughout the railway system is, from the point of view of the designer, just as exacting as the problem of the new station building, but it is far more widespread.

The S.N.C.F. in France, now a nationalized railway for more than a decade, has made considerable progress on this standardization of detail.[6] The coloring of station signs, the lettering, the types of ticket window are all the subject of type designs.

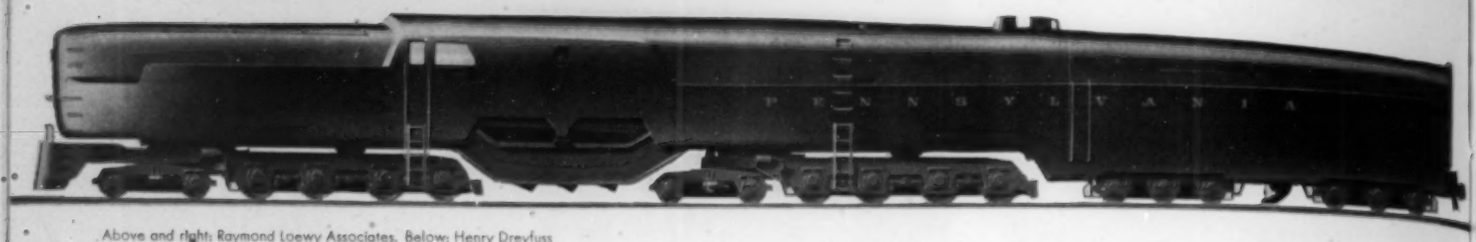
In England work on this study of detail and equipment was already well advanced before nationalization. The London Passenger Transport Board had already set a remarkably high standard in its equipment, its finishes and its advertising and information display. The London Midland Region, too, had developed a number of prototype models, for instance the ticket window, the ticket office front (which is worked out in relation to unit station planning), the screened platform seat and the standard waiting room seat. It is through the development of these new standards and by the adoption of annual programs of work that a consistent attack can be made on one of the largest and most difficult of the railway architect's problems — the transformation of railway environment.

[6] In England the Nationalization not more than a few months old, the principal visual evidences of unity have so far been confined to the "British Railways" which is appearing on rolling stock and the new colors which will shortly be seen. In these experimental schemes the locomotives have colors according to their class: powerful express passenger engines are blue; other express passenger engines, green; mixed traffic engines are black, but with lining; freight engines are all black. Chocolate and ivory or alternatively plum and cream are to be used for main line corridor trains. Local Suburban Stock will be maroon and multiple electric stock green.

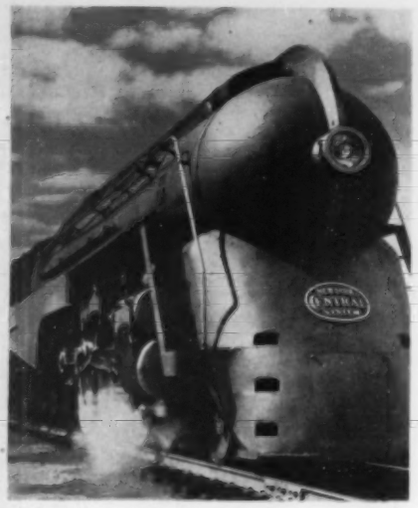




This fascinating roundhouse at Avignon, France, is remarkable for its ingenious and interesting structure, its functional architecture. The sections above show the special smoke-extraction system designed to remove smoke both from the building in general and from the engines in particular. The view at the top, left, shows the extraordinary lightness of reinforced concrete construction for which French engineers are so famous



Above and right: Raymond Loewy Associates. Below: Henry Dreyfuss



RAILROAD ARCHITECTURE IN NORTH AMERICA TODAY

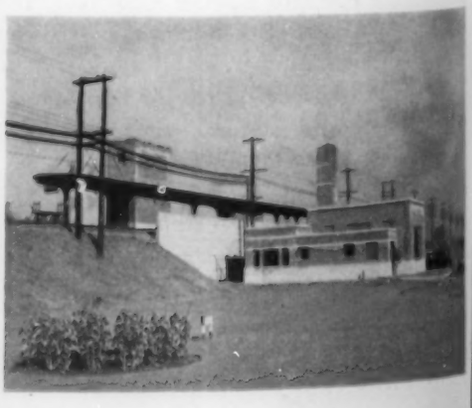
BACK in Casey Jones's time, or Commodore Vanderbilt's, America's railroads were its pride and joy. They were also the apple of Uncle Sam's eye, and he found many ways to help them extend their lines across the country and build scores of new stations, in impressive if not very handsome architectural styles.

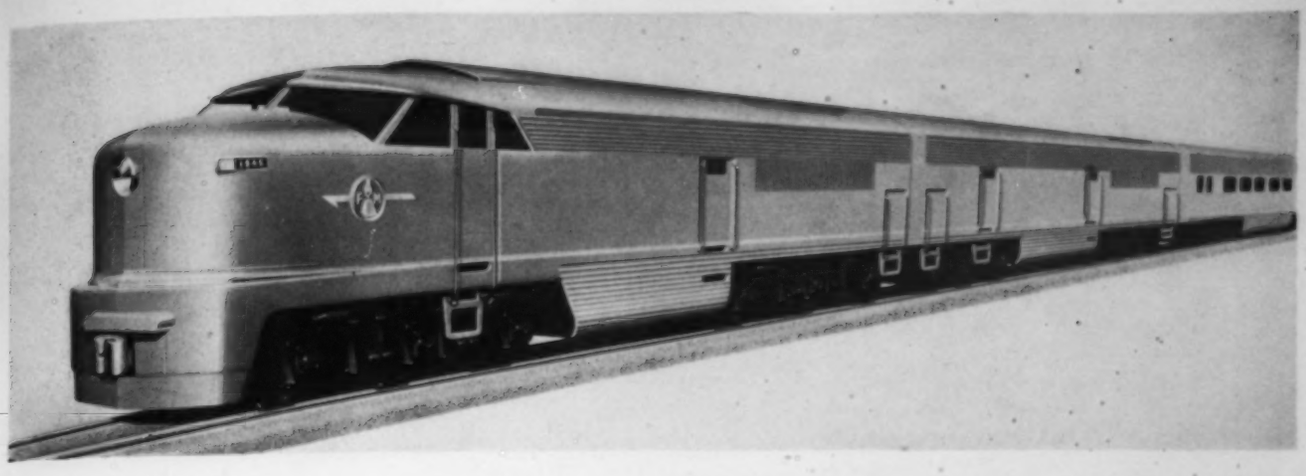
But that was a long time ago, and Uncle Sam has turned to younger, more exciting favorites. Now his largesse goes to highway systems and air lines, and autos and trucks and airplanes all take business from the railroads. Bus stations and airports have the new and glamorous terminals, and the railroads are left to compete as best they can. All Uncle Sam does now is to tell them what they can and cannot do.

So railroad stations are still, as ARCHITECTURAL RECORD pointed out in December, 1943, a neglected architectural opportunity. There is no real program of station building in the United States, and it would seem that railroad executives are not convinced that architecture has anything to offer them in their current struggle for public favor and business.

The "opportunity" is nevertheless intriguing. There

These four stations, here anonymous, are all new. American railroads, which have streamlined and glamorized their trains, apparently have not given the same



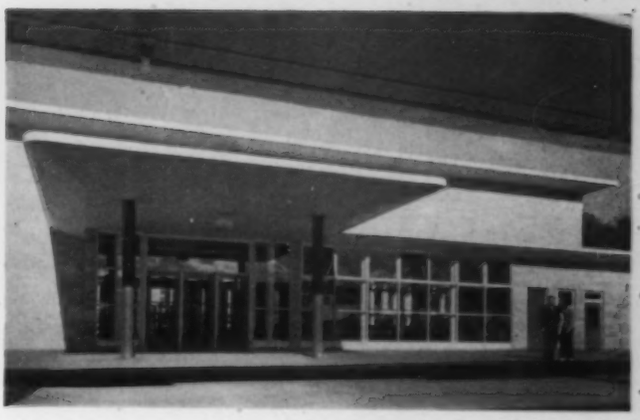


Hedrich-Blessing Photo

are literally thousands of railroad stations in the land, virtually all of them at least 50 years old, obsolete, unsightly, expensive to heat and maintain. Once the pride of a growing community, they are now the eyesore of a city. Rail lines are under heavy pressure to modernize and rebuild them. They do something less than nothing to brighten a passenger's trip, or induce him to make a rail journey.

It is the apparent lack of appreciation for architectural design that warrants this article. In preparation for this Building Types Study, the RECORD contacted all of the major railroad companies, some 65 of them, to check on their plans and their current station building.

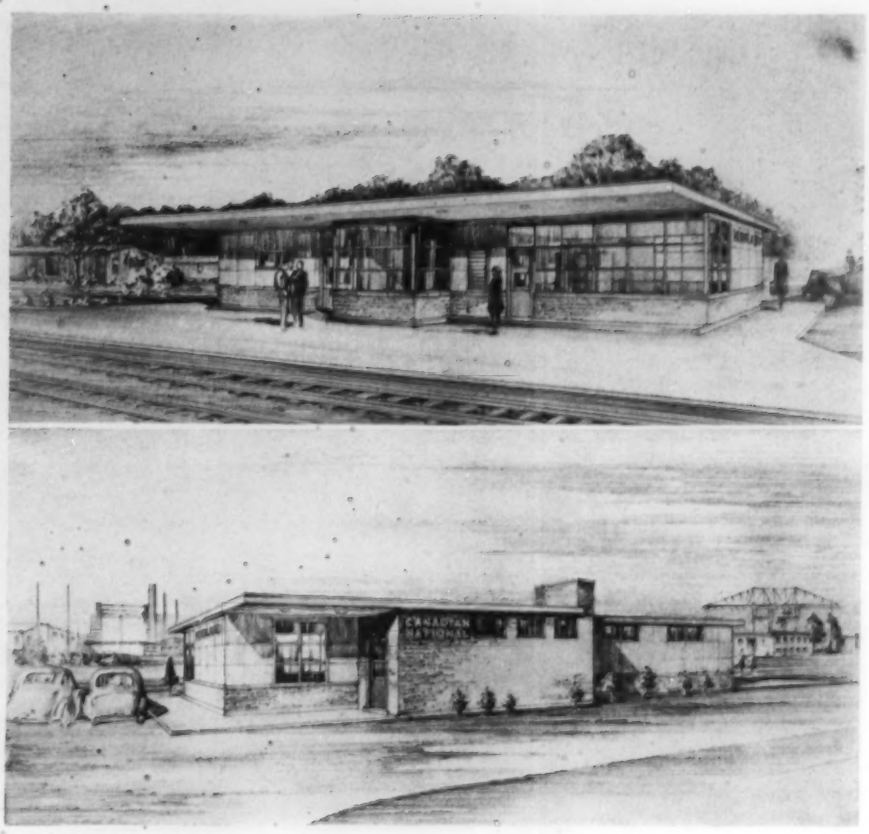
While it was not surprising that this effort showed that there was no real program of station building, it did turn up a considerable number of new or modernized stations. The distressing thing was the architecture of the current crop of stations, however small. There were, of course, a few excellent stations — Holabird and Root's station at Burlington (ARCHITECTURAL RECORD, October, 1944), some new ticket offices, a new station for an eastern line by Lester Tichy (see page 143). Against these there are a dozen or more nondescript imitation temples or imitation hot dog stands or imitation something else, which can only mean complete disregard for station design.



Merge Studios

thought to their stations. It would appear that railroad stations are still, as ARCHITECTURAL RECORD *pointed out five years ago, a neglected architectural opportunity*

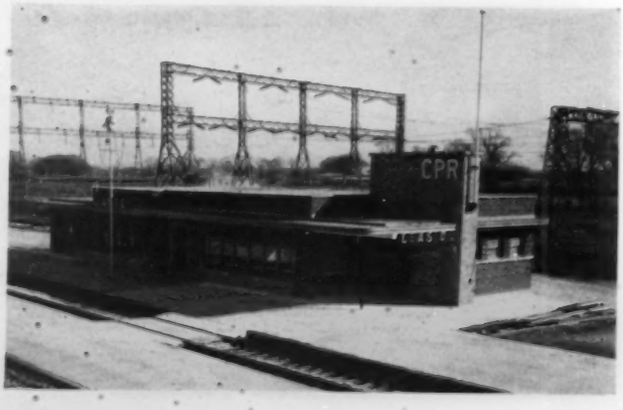
Holabird and Root's station for Burlington, Iowa, upper photograph (AR, Oct., 1944), gives a hint of what might happen if the railroads gave the same attention to stations that they do to trains. The Santa Fe ticket office in Los Angeles (AR, June, 1947), by Maynard Lyndon, architect, typifies recent attention by railroads to the places where they sell tickets



CANADA MAKES A START

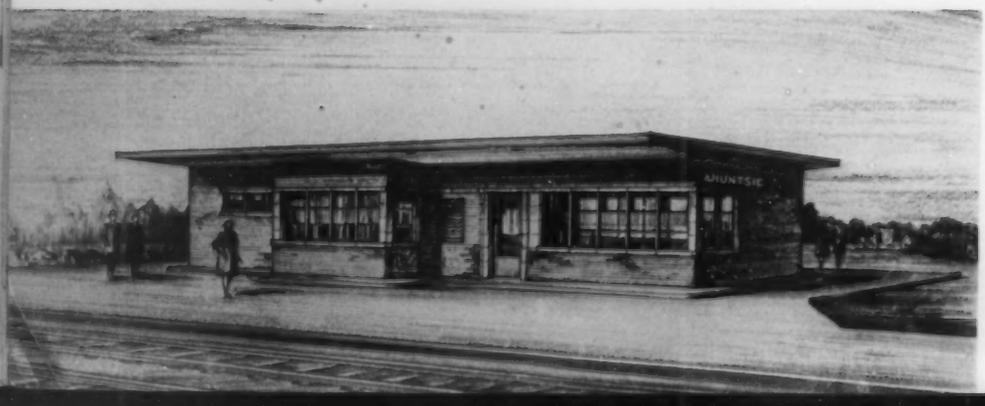
The Canadian National Railways is building a number of fine little stations, such as this one at Midland, Ontario, designed by John Schofield, chief architect. Designs are direct and unpretentious, and show evidence of consideration for economical maintenance, as in England

This Canadian Pacific Railway station at Leaside, Toronto, Ont., also shows evidence of the direct approach to station design



One suspects, incidentally, a desire by the railroads to keep the really good stations out of the public press. The very enthusiasm with which good stations are received frightens railroad executives; they are already over sensitive to public demand; they shudder to think of petitions for new stations from every whistle stop in the land.

Railroad executives have already amply demonstrated that they are no strangers in the field of design. They have paid out important commissions to industrial designers like Henry Dreyfuss and Raymond Loewy for locomotive and car design, for streamlined trains and modern coaches and handsome ticket offices. One cannot quarrel with the judgment that spends its money first for the trains in which the public rides, or perhaps for the places in which railroads do their actual selling. And there is a certain promise that when, as and if they turn their attention to stations, the railroads will demand the best design talent, will be willing to let stations look like stations, not Spanish missions, and will again make America proud of its railroad plant.



Another station for Canadian National Railways, this one at Ahuntsic, P. Q. The same design will also be used for Pointe aux Trembles, P. Q., and other locations

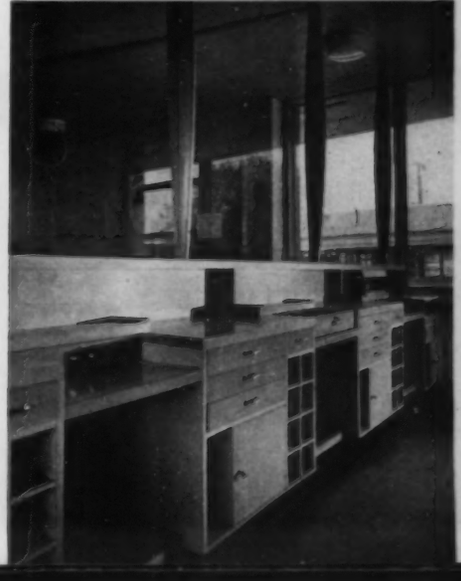
STATION ON AN EASTERN MAIN LINE

Gottscho-Schleisner Photos

Lester Tichy, Architect

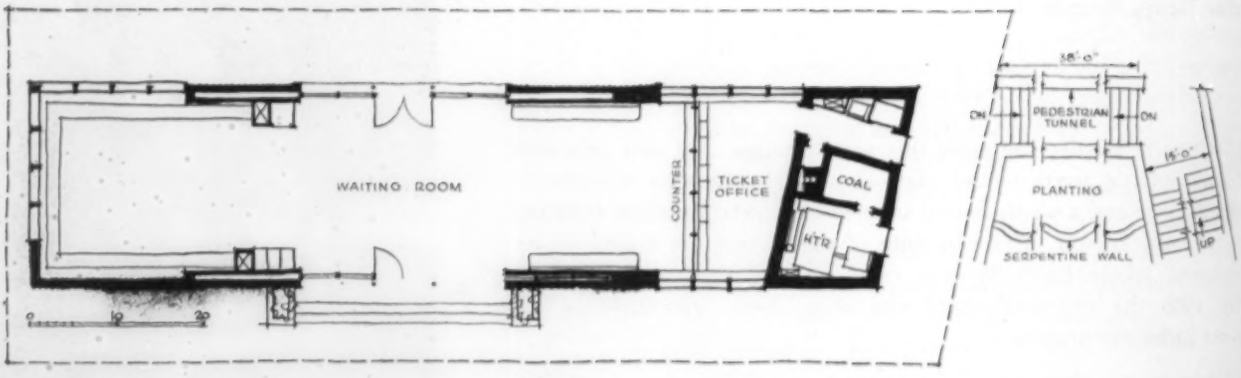
BUILT early during the war, this small station has two principal elements: a north-bound platform, which carries a completely new building; and a south-bound side, whose existing station building was radically rebuilt. The two sides of the station are linked by an underpass, whose butterfly-type entrance canopies contrast pleasantly with the straightforward and clean brick structures of the station buildings proper.

The north-bound platform building illustrated on this page stresses such details as efficient maintenance, economical operation and excellent visibility for passengers and personnel alike. The ticket office (right) is a fine example of neat and carefully considered design planned to facilitate its business

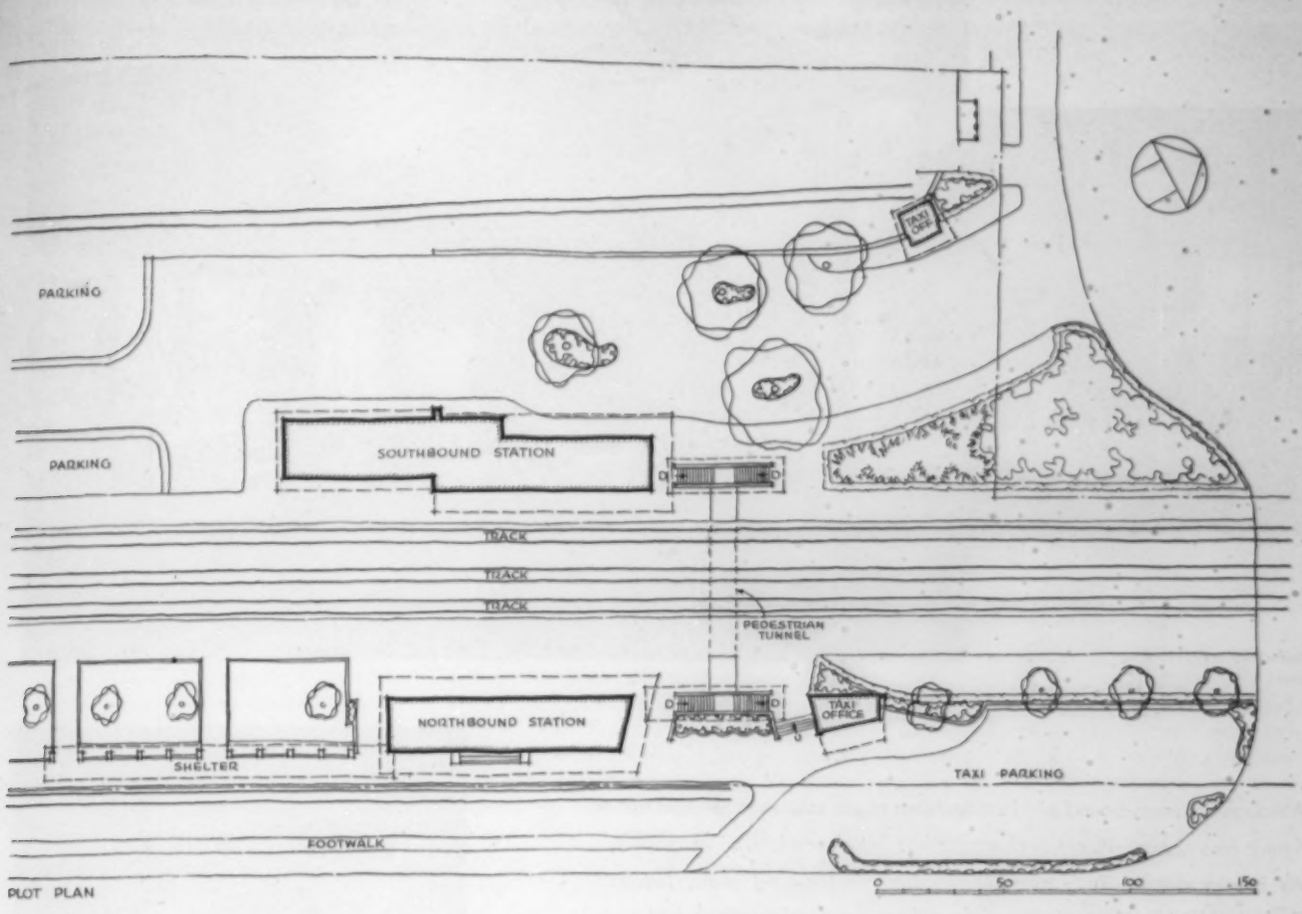


Gottscho-Schleisner Photos

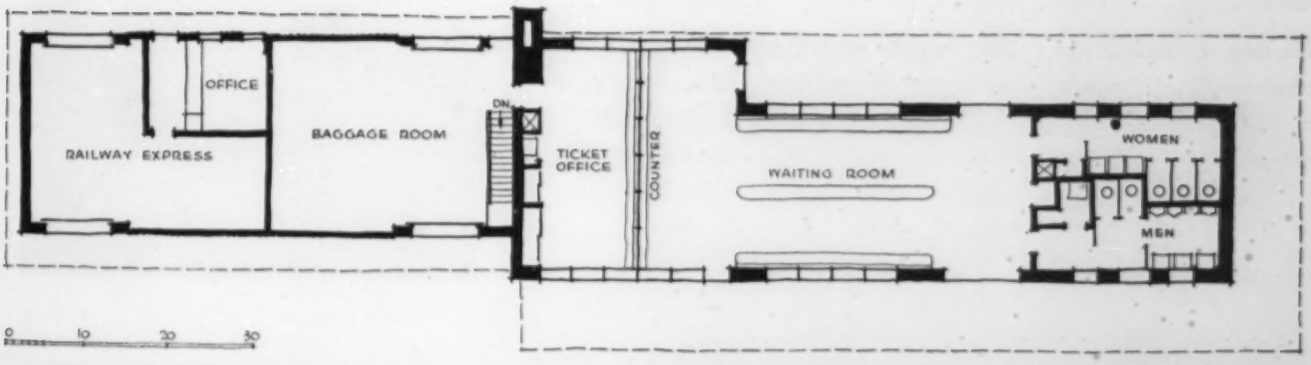
The sequence of photographs on these two pages shows, first, the wide and well-protected north-bound platform; then the amusing underpass design with its corrugated transite surfaces; and, finally, the redesigned south-bound platform building with its former pitched roof, which was extended to afford greater protection to the platform itself



The plans are simple, and set a new standard for clean station design. An ample use of glass, which affords an almost uninterrupted vision of the platforms and train approaches from all parts of the buildings, has replaced the former unsightly bay windows common to older stations. All planning is very open, so that great crowds can pass through the station buildings rapidly without obstacles


PARKING
TAXI OFF
PARKING
SOUTHBOUND STATION
TRACK
TRACK
TRACK
PEDESTRIAN TUNNEL
NORTHBOUND STATION
TAXI OFFICE
SHELTER
TAXI PARKING
FOOTWALK
0
50
100
150

PLOT PLAN


OFFICE
RAILWAY EXPRESS
BAGGAGE ROOM
DN
TICKET OFFICE
COUNTER
WAITING ROOM
WOMEN
MEN
0
10
20
30

Gottscho-Schleisner Photos

Although the south-bound platform building represents an alteration rather than a new design, its entire character has been completely "revamped." All interior details, such as wall-paneling, cantilevered seats, terrazzo floors, and wide glass areas are impressive for their simplicity and ease of maintenance. The lettering within the station—an important point in railroad design—is distinguished for its clarity

The view of the remodeled building from the road approach shows how pleasantly the old structure was integrated with the new, modern design. It also indicates a possible manner of modernizing existing, antiquated railroad buildings where there are not funds for a more radical revision

LIGHTWEIGHT AGGREGATES CUT COSTS IN TWO BUILDINGS

Wurdeman and Becket, Architects, and Murray Erick & Associates, Engineers, conducted test program and analyzed economic advantages of lightweight concrete and vermiculite fireproofing plaster

CAN an office building built at today's prices compete successfully with similar structures erected prior to World War II? Architects Wurdeman and Becket hope to prove it through use of lightweight aggregates in two major buildings now under construction, the Prudential Insurance and General Petroleum Buildings in Los Angeles.

To say that any two people are the pioneers of lightweight aggregates is a rather broad statement since use of these materials dates back some twenty years, and knowledge of them even longer. But these architects, in a sense, are pioneers in the use of lightweight aggregates in large commercial buildings where its use really pays. The General Petroleum Building will contain 530,000 sq. ft. and the Prudential Insurance Building 517,000 sq. ft., with each building costing approximately $7,000,000. The saving of 10 to 12 per cent of the generally accepted construction cost of large office buildings such as the Prudential and General Petroleum Buildings might mean the difference between plan and reality.

Preliminary Analysis

In the preliminary planning of these two buildings, the costs of the many construction items which comprise a complete building were thoroughly analyzed. This analysis disclosed that the rise in costs of certain parts of the work were far in excess of the average rise in building costs. Cost of concrete fireproofing, including all the form work, was found to have increased tremendously. The weight of the concrete entailed a heavy steel frame to support it; thus high priced steel was being wasted because of heavy-weight design.

The architects with the assistance of their engineers, Murray Erick & Associates, determined that in an office building constructed with stone, concrete, concrete fireproofing and heavy exterior walls, the weight of the building (or dead load) is approximately five times the design live load (or pay load) to which the building will be subjected.

Since the building structure is designed to carry both dead and live loads at specified unit stresses in all members making up the building structure, it follows that by reducing dead weight a nearly proportionate material saving will be effected, particularly in structural steel, reinforcing steel and footings.

Recognizing the advantages of dead weight reduction in a building, the architects then investigated the structural soundness and economics of construction with a minimum of weight.

Lightweight Aggregates Tested

Available in Southern California were at least four different lightweight aggregate materials worthy of consideration. The firm's engineer conferred with the producers of each of these materials and, as a result, set up a program of extensive laboratory tests to determine the properties of concrete produced with each aggregate.

The Smith-Emery Laboratories of Los Angeles were instructed to conduct a series of tests using four lightweight aggregate materials and three different admixtures. The tests were conducted on a constant slump of 4¼ in., and the design mixes set up to produce a concrete having a 28-day ultimate compressive strength of 2500 lbs. per sq. in. The following determinations were made: quantity of cement per cu. yd. of concrete; water/cement ratio; workability; tendency to segregation; compressive strengths — 7 days and 28 days; con-

Light steel frame construction of Prudential Insurance Building made possible by use of lightweight aggregates in concrete and by fireproofing secondary beams and interior columns with vermiculite

crete weight per cu. ft. as tested and dry weight; modulus of elasticity; shrinkage; water absorption; modulus of rupture; pull-out bond strengths on vertical bars, bottom horizontal bars, top horizontal bars; bleeding of the concrete; and effects of each admixture as compared to concrete with no admixture.

Vermiculite Fireproofing

Just prior to and during the time of preliminary planning of the General Petroleum and Prudential Buildings, the local building code was revised to permit the use of vermiculite plaster as fire protection for the entire structural frame of a Type I building. The approval of vermiculite plaster fire protection for columns was given too late to incorporate this feature in the General Petroleum Building design. Vermiculite plaster fire-protection was used, however, on the interior free standing columns of the Prudential Insurance Building, resulting in considerable savings in both dead weight of the building and construction costs.

Weight Savings Applied

As a result of the test investigations, the architects adopted a policy of simplicity of design and a minimum of weight consistent with the principles of modern architecture and sound engineering practice. Deep reveals, heavy masonry walls and piers were eliminated wherever possible. Six-foot depth spandrels made possible the use of light steel trusses to support the tributary floor and wall loads and to resist the lateral forces due to wind and earthquakes. These deep spandrel trusses reduced the unsupported length of wall columns by 40 per cent, with a like reduction in the bending moments induced in these columns by seismic forces.

As a further step to reduce dead weights and construction costs in the General Petroleum Building, the three street front walls and the fire-protection of the steel frame were constructed of lightweight gunite blown against steeltex backing attached to the structural members. The gunite was placed as a hollow envelope of 2 in. shells on both the inner and outer faces of the steel spandrel trusses and other structural members of the frame. This construction resulted in dead weight saving in these structural walls of approximately 50 per cent and largely eliminated the use of normal forms.

The General Petroleum Building, if designed and constructed according to conventional practice (using stone concrete and heavy wall construction), would have required approximately 5000 tons of structural steel. The structural steel in the building as constructed will not exceed 3800 tons. Considerable other savings were effected in form work, reinforcing steel and footings.

The proportion of dead weight to live load in office buildings has been in the past approximately five to one. An analysis of both the General Petroleum and the Prudential Insurance Buildings revealed that, through efforts to reduce dead weight, the ratio for these buildings is approximately three to one.

The average cost of fire protection of structural steel beams with concrete is from 1½ to 2 times the cost of the structural steel beam itself laid down in the fabricator's yard prior to the costs of fabrication and erection. The weight of stone concrete fire protection for an 18 in. beam is 225 lbs. per linear ft. of beam. This fireproofing weight is reduced to only 25 lbs. by the use of vermiculite plaster fire protection. The saving in weight, assuming beams to be spaced on 8 ft. centers, is 25 lbs. per sq. ft. of the building area.

Experience showed that vermiculite plaster fire protection can be provided at a cost less than that of forms required for concrete fire protection.

Cost Savings

Dead weight reduction in these buildings was found to effect a saving in the structural steel of at least 1000 tons in each building. Estimates indicated that there would be about 12,000 yds. of lightweight concrete in the General Petroleum Building and 14,000 yds. in the Prudential Insurance Building. Basing the analysis on structural steel cost of $180 per ton erected, and a premium cost of $5.00 per yard for the lightweight concrete, there was an anticipated saving of approximately $180,000 in the cost of structural steel for each of the two buildings, whereas the premium to be paid for lightweight concrete was only $60,000 on the General Petroleum Building and $70,000 on the Prudential Insurance Building.

Survey of Dead Weight Savings

General Petroleum Building	
12,200 yds. Lightweight concrete..	8,300 tons
Structural steel.....	1,000 "
Vermiculite fireproofing.....	1,000 "
Hollow wall construction.....	2,800 "
Total saving.....	13,100 tons
Dead weight as designed.....	25,800 tons
Design live load,	
1st story columns.....	8,300 "
Weight of structural steel.....	3,220 "
Weight of steel joists.....	570 "
Prudential Insurance Building	
14,500 yds. Lightweight concrete..	9,800 tons
Structural steel.....	1,000 "
Vermiculite fireproofing.....	3,900 "
Precast stone facing.....	900 "
Total saving.....	15,600 tons
Dead weight as designed.....	32,000 tons
Design live load,	
1st story columns.....	14,300 "
Weight of structural steel.....	3,620 "

Left: pouring lightweight pumice aggregate in the construction of floor slabs and fireproofing the main girders and tie beams; mix is placed with help of pneumatic vibrators. Right: secondary beams and interior columns are fireproofed with vermiculite in plaster

PLANNING X-RAY DEPARTMENTS FOR HOSPITALS

Space and equipment needs for General Hospitals of various sizes

George B. Myers, *Picker X-Ray Corp., New York City*

See TIME-SAVER STANDARDS, *pages 157, 159*

PLANNING x-ray departments and facilities for hospitals is a highly specialized job just as are those concerning the medical applications and development of the equipment. Optimum x-ray department efficiency, convenience and appearance can be achieved only through a knowledge of the special problems and requirements involved and from careful study in the preparation of plans and specifications.*

In general the size of the x-ray department will depend on the size of the hospital and type and volume of x-ray work to be handled. Factors to be considered are (a) the type of hospital, general or specialized, and whether intended for chronic or acute diseases, (b) area that the hospital will serve, (c) number of outpatients referred to the hospital by local physicians, (d) provisions for future expansion, (e) radiologist — whether full or part time, ability, etc.

The space required for the x-ray department does not vary directly with the size of the hospital. For example, the USPHS plans specify 565 sq. ft. area for the x-ray suite of the 50-bed general hospital and a 3060 sq. ft. area, exclusive of the cystoscopic room, for the 200-bed hospital.

The x-ray suite for the smaller hospital (to 100 beds) should contain a combination radiographic and fluoroscopic room; darkroom; dressing rooms and toilet; waiting space; and combined office, viewing and filing room.

Larger hospitals (over 100 beds) will require a therapeutic section containing deep and superficial therapy rooms with dressing rooms and toilet, examining room, rest room and waiting space; one or more radiographic and fluoroscopic rooms with large darkroom, dressing rooms and waiting space; separate film filing room, radiologist's office; and equipment for special departments such as cystoscopic, fracture, fluoroscopic and out-patient.

It is desirable to locate the x-ray department in a wing on the first floor near the elevator and out-patient entrance to minimize corridor traffic. At least one long wall of the x-ray rooms should be an outer wall to reduce the amount of lead protection required.

The following design features should be considered:

1. The x-ray rooms should be of sufficient size to permit free movement and adjustment of the various pieces of apparatus. The hospital diagnostic room should not be smaller than 11 by 16 ft. (USPHS standard 11 ft. 6 in. by 18 ft.)

2. Space should be allowed for the entrance and placement of stretchers or wheel chairs at the side of the x-ray table. At least 5 ft. should be provided between the operator's side of the table and the wall. There should be a door (minimum width 3 ft.) leading directly to the corridor from the x-ray room.

3. Fluoroscopy requires a darkened room; therefore the windows of fluroscopic or combination diagnostic rooms should be provided with light-tight shades in special baffle mounts and lightproof doors.

4. For fluoroscopy it is necessary for the operator's vision to become fully adjusted to darkness before starting the examination. This adaptation requires five to ten minutes or more. A small red or blue light is installed either in a separate or combination ceiling fixture in order that the operators may see to position the patient, and to prevent operators from falling over the apparatus.

X-ray controls are equipped with an auxiliary set of contacts arranged to open when x-rays are on, thus turning off the red or blue light so the room will be in total darkness. Modern treatment of this problem, particularly in busy rooms, is to provide indirect red lumiline lamps below the ceiling and aisle lights in the walls a foot or so from the floor; they are controlled by independent room light switches on the footswitch. The lumiline lamps provide sufficient light for radiography without spoiling dark adaption.

5. A lead lined control booth with lead glass window should be provided. The booth should be at least 4 ft. deep for proper protection. An entrance door to the booth should not be provided (see layouts, pp. 157 and 159), nor should a common booth be used for separate rooms.

6. Dressing rooms and toilets should be placed adjacent to the x-ray rooms so they will be directly accessible. Likewise, there should be a corridor or waiting room entrances into the dressing room and toilet section so patients can enter or leave them without going into the x-ray rooms. Dressing rooms should be about 3 by 4 ft.

7. In order to obtain an opaque silhouette for the examination of the stomach, intestines, etc. the patient is given barium; therefore a small section of the x-ray room, or a separate small room, should be available for mixing barium. A small sink with a plaster trap and work space, a convenience outlet for electric mixer and a storage cabinet should be installed.

8. Storage space in the x-ray room for linen and x-ray accessories should be included. It saves space and improves the appearance to recess these shelves or cabinets and the barium section as well.

9. The x-ray department, particularly the fluoroscopic and darkrooms, should be well ventilated or, preferably, air-conditioned.

10. Modern lighting and interior decoration should be applied to the x-ray department. Recessed or cove fluorescent lighting provides soft even illumination without interference with the equipment. Glass brick partitions should be considered where practical.

11. With modern shockproof apparatus, it is no longer necessary to place the transformer in the diagnostic room nor to provide a transformer room. It saves space and improves the appearance to install the transformer in a convenient

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* *Detailed information in this article is based on hospital planning material supplied by the Division of Hospital Facilities, U.S. Public Health Service, and the layouts were taken from the Elements of the General Hospital through the courtesy of the U.S. Public Health Service. See ARCHITECTURAL RECORD June, July, Aug. 1946.*

position outside the x-ray room. Special channels and fittings are available for neatly concealing the shockproof cable connections to the x-ray tubes.

X-Ray Darkrooms

X-ray darkrooms provide facilities for loading x-ray films in cassettes prior to exposure, for removing the films after exposure, and for developing and drying them. These operations are generally combined in a single darkroom, the size depending on the number of films to be processed. The darkroom should be located near the radiographic and viewing rooms, particularly the former, for convenience.

Light-tight entrances for darkrooms are of three types: single door, lightlock (double door) and maze. The single door with an inside lock is employed for small darkrooms or where a single technician routinely utilizes the room. Lightlock doors should be provided with mechanical or electrical warning signals to prevent accidental opening of both simultaneously. The walls of the lightlock may be any desired color or finished to match the darkroom proper, while the walls and ceiling of the maze should be finished in flat black for maximum light absorption. A ceiling safelight controlled by a switch at the outer entrance should be provided for the lightlock or maze.

The darkroom proper is divided into the loading (dry) section and processing (wet) section. The loading side consists principally of a loading bench with linoleum top which is constructed to fit the particular requirements. It generally contains a film bin, storage shelves for cassettes, drawers, cabinets or shelves for storage of chemicals and supplies, film hanger storage racks, etc. The processing side contains the developing tank, dryer and utility sink.

In order to transfer cassettes to and from the darkroom conveniently, cassette pass boxes are mounted in the wall between the radiographic room and darkroom. These are lead lined cabinets with mechanically interlocked doors to prevent simultaneous opening.

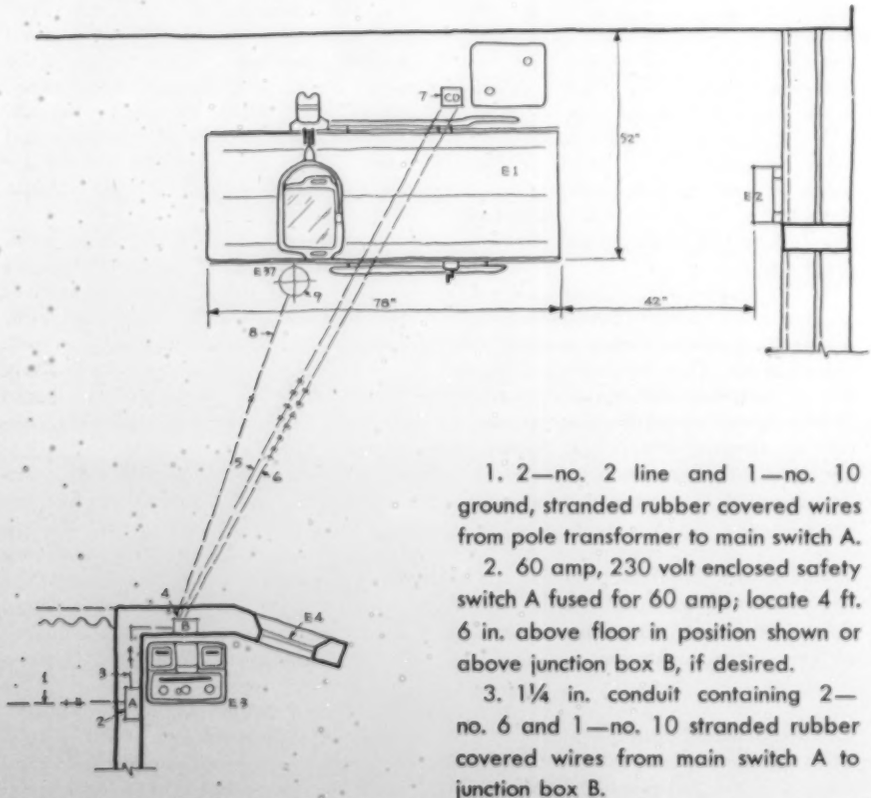
The modern trend in darkroom design is to provide separate processing and drying rooms connected by a through-the-wall wash tank. The advantages of this method are: (1) wet films can be viewed without disturbing the normal procedure; (2) the lightlock or maze can be eliminated since frequent entrance to the darkroom is unnecessary; and (3) efficiency of the darkroom is increased. A darkroom of this type can serve as many as three to six diagnostic rooms and have a capacity of 300 finished radiographs a day.

Darkroom floor coverings should be stain and corrosion resistant, watertight, durable, non-slippery and suitably colored. Generally, vitreous tile and asphalt tile are the most satisfactory.

Contrary to the general impression, the darkroom should not be finished in dark colors, but rather in colors which reflect the greatest amount of safelight illumination. The ceiling and upper walls may be painted white and the remainder cream or pale shades of any desired color in semi-gloss finish. The finish of the wet side should be corrosion and stain resistant.

Indirect ceiling safelights are needed, and direct, wall mounted safelights usually are installed over the loading bench and developing tank. White light fixtures are furnished for use when safelight is not required. The safelights should be wired in the same circuit to a wall switch at the inner entrance. The white light wall switch should be mounted where it cannot be turned on by mistake. Convenience outlets are required

Layout and Wiring Specifications for X-Ray Room, 40-Bed General Hospital



1. 2—no. 2 line and 1—no. 10 ground, stranded rubber covered wires from pole transformer to main switch A.

2. 60 amp, 230 volt enclosed safety switch A fused for 60 amp; locate 4 ft. 6 in. above floor in position shown or above junction box B, if desired.

3. 1¼ in. conduit containing 2—no. 6 and 1—no. 10 stranded rubber covered wires from main switch A to junction box B.

4. 6 by 6 by 4 in. junction box B recessed above baseboard with cover plate provided.

5. 1½ in. conduit containing 2—no. 6, 1—no. 10 and 5—no. 14 stranded rubber covered wires from junction box B to junction box nipple C.

6. 1½ in. conduit containing 13—no. 14 stranded rubber covered wires from junction box B to junction box nipple D.

7. 6 by 6 by 4 in. waterproof junction box, cover to be flush with finished floor.

8. ½ in. conduit containing 2—no. 14 stranded rubber covered wires from junction box B to room light E37.

9. Fluoroscopic room light E37—ceiling fixture containing red or blue light.

Other identification: E-1, combination 100 ma radiographic and fluoroscopic x-ray unit; E-2, wall mounted cassette holder; E-3, control unit (part of E-1); E-4 leaded glass view window.

Power Supply: 15 kva, 200–250 v, 60 cycles, single phase.

for the safelights, refrigerator, illuminator, tank, dryer and motor driven ventilator.

Suitable ventilation should be provided either by air-conditioning, by natural vent or motor driven type ventilators or both. A light-tight window which can be opened occasionally to air out the darkroom is desirable.

Viewing and Filing Room Equipment

Viewing apparatus consists of a stereoscope for viewing stereo pairs of films and film illuminators or view boxes. Illuminators consist of fluorescent lamps mounted in a housing with special reflectors and an opal glass front to produce a bright, even illumination over the entire viewing area. These boxes may be mounted in the wall, hung on the wall or desk mounted. There has recently been developed an explosion-proof illuminator approved by the Underwriters for use in Group I, Class C hazardous locations. This type should be specified for operating room applications.

X-Ray Equipment for Special Departments

A cystoscopic room for genito-urinary work is specified for general hospitals of 100 beds or more. There is some controversy regarding the location of this room. In some cases it is in the surgical department, in others in the x-ray department. When located in the operating room floor remote from the x-ray department, separate small-scale darkroom facilities should be provided. The x-ray equipment for the cystoscopic room includes a 100 ma generator with x-ray tube and a urological x-ray table with accessories. The other equipment supplied generally depends upon the preferences of the specialist in charge, and he should be consulted for these details.

There is a question also as to whether the fracture room is to be located in the x-ray, emergency or surgical departments. In any event, it is desirable that fracture reduction work be carried out under the supervision of a doctor experienced in x-rays to avoid possible over-exposure to the patient or surgeon. The x-ray equipment for the fracture room generally consists of an x-ray mobile bedside unit of 15 ma capacity.

There is considerable demand for a mobile x-ray unit for bedside examination in hospitals of 100 beds or more. A storage closet (3½ by 4½ ft.) should be provided for this apparatus in the x-ray department.

In tuberculosis hospitals and large health centers, separate fluoroscopy rooms are provided on each floor or close

Nature of X-Rays

X-rays are invisible, but have many of the properties of visible light. They are likewise a type of radiant energy, but of so short a wavelength that they will penetrate the human body. The apparatus required to produce x-rays consists basically of a high tension transformer to supply the necessary high voltage; a special highly-evacuated electronic tube in which the x-rays are produced; and controls for adjustment of the three variables involved: (a) voltage which governs the degree of penetration, (b) current which determines the quantity of radiation and (c) exposure time.

X-Rays in Medicine

X-rays may be used for either diagnosis (radiography or fluoroscopy) or therapeutic treatment.

The diagnostic procedure is twofold: (1) by means of radiograph (x-rays pass through the body to affect an emulsion-coated film, producing an x-ray picture or radiograph); (2) fluoroscopy (in which the image produced on a fluorescent screen by the x-rays passing through the body is directly visualized).

Each application requires different x-ray generating apparatus. Fluoroscopic examinations are made at settings of up to 90 kvp (kilovolts peak) at 5 ma (milliamperes) during intervals of a few seconds each. (Voltages applied across the x-ray tube are measured in kilovolts peak, and current through the x-ray tube is measured in milliamperes; thus x-ray generators are rated at their maximum capacities in kvp and ma.)

Radiographs, however, require up to 100 kvp at from 15 to 500 ma with exposure times of from 1/60 to 20 seconds (generally the time varies inversely with the milliamperage) depending upon the thickness and character of the part radiographed and the technique employed.

Complete diagnostic facilities are usually supplied by a single combination x-ray generator with the necessary auxiliary apparatus (separate fluoroscopic and radiographic x-ray tubes are employed in the equipment for the larger hospitals for operating convenience). In special departments, separate fluoroscopic and radiographic apparatus may be specified.

Small hospitals are usually concerned only with diagnostic x-ray equipment, while large institutions (over 100-bed) require space and equipment for deep or superficial therapy or both. X-ray therapy treatments are made at from 100 to 250 kvp (or higher) at 5 to 25 ma; the kilovoltage depending on the depth of the lesion — on the surface (superficial therapy 90–120 kvp) or deep seated (deep therapy, 200 kvp or higher). Therapy generators are designed for more or less continuous operation.

Auxiliary X-Ray Apparatus

In addition to the x-ray generator (control, transformer and x-ray tube), auxiliary apparatus is required primarily for special techniques and for the convenience of the operator and patient. This apparatus includes:

1. X-ray tables generally arranged so that the body and top may be tilted either manually or by a motor drive from a vertical to a position 11° beyond the horizontal. Combination tables include a counterbalanced fluoroscopic screen, arranged so it may be adjusted to cover most of the table top area. On two-tube units, the fluoroscopic tube is mounted on the screen carriage inside the table body so it moves in unison with the screen. Also included is a *Bucky* diaphragm, a device with a movable lead grid which reduces the secondary x-radiation scattered from the body and surrounding objects thus improving the radiograph. The *Bucky* is counterbalanced so it may be moved along the length of the table.

2. X-ray tubestand to support and angulate the x-ray tube with respect to the patient. Radiographic tubestands are available in two types: floor rail mounted and floor and ceiling rail mounted. The bi-rail type provides a greater range of adjustment.

3. Cassette changer. For certain diagnoses it is necessary to provide a three dimensional radiographic view. This is accomplished by using two separate films, shifting the tube a definite distance between each exposure. The resulting films are viewed simultaneously on a stereoscope, a device consisting of two film illuminators and a suitable optical system. The cassette changer provides a mechanical means for shifting the second film cassette (lightproof film holder) into position, and moving the exposed cassette into a protected area simultaneously with the shifting of the tube on the tubestand.

to the pneumothorax rooms, since the equipment is inexpensive. The fluoroscopic room should have a darkened anteroom for waiting ambulatory and stretcher cases. An enclosed vertical fluoroscope with x-ray generator is specified for the fluoroscopy room.

Modern practice calls for the routine chest x-ray examination of all patients upon admission to the larger hospitals (150 beds and over). Recent developments in photo-electronic timing and of photographing the image produced on a fluoroscopic screen on 70 mm roll films, makes practical an extremely rapid examination rate. Such equipment is available in wide variety of models. Sufficient for the smaller hospitals of approximately 150 beds are a *minograph* camera hood and camera, with necessary auxiliary photo-timing apparatus connected to the x-ray generator in the x-ray department. For the larger hospitals a complete *minograph* unit in the out-patient department is specified.

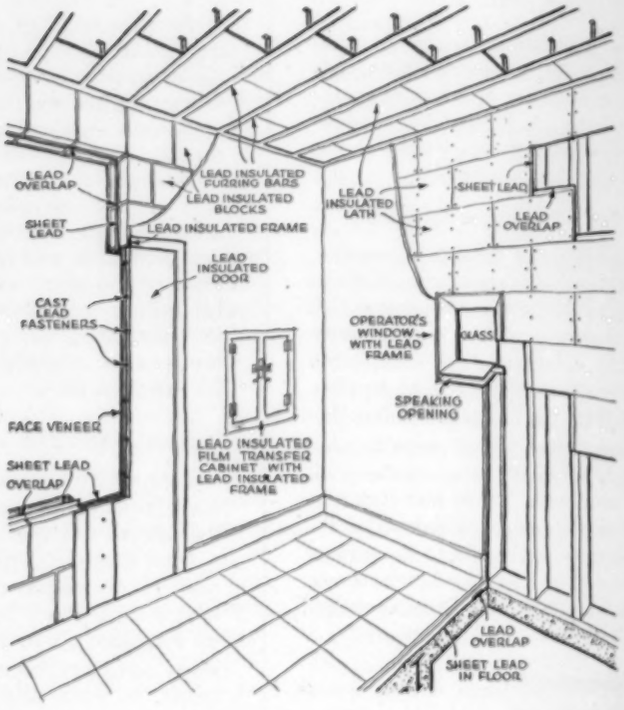
In addition, the out-patient department is provided with a fluoroscopy room and a dental x-ray unit in the dental room.

Protection

X-radiation in either its primary form (direct beam) or as secondary scatter emanating from objects struck by the primary beam is dangerous to the operator and neighboring personnel. Lead is most generally used for protection purposes. It is commercially available in a number of forms — cinder concrete blocks containing sheet lead, plaster board lath backed with lead and wainscot lead laminated panels. The operator's position at the x-ray control should be protected by a lead lined booth or floor screen with lead glass window. The darkroom wall and certain of the x-ray room walls should be lead lined. The thickness of lead required is dependent upon the maximum kilovoltage used and for diagnostic purposes (100 kvp maximum), $\frac{1}{16}$ in. thick lead is sufficient.*

Although high voltages are required to produce x-rays, there is no danger of high tension shock from modern shockproof x-ray apparatus when properly installed and operated. It is extremely important, however, that all parts of the installation (x-ray controls, transformers, tubeheads, shockproof cables, tables, tubestands, fluoroscopes, etc.) be permanently connected to a suitable ground with the proper size wiring in accordance with the electrical code.

* For complete details and specifications on x-ray protection refer to X-Ray Protection, Bureau of Standards Handbook H.B. 20. Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.



Cut-away view of x-ray room showing uses of lead for protection

Power Supply and Wiring

Proper operation of x-ray equipment is dependent upon adequate electrical power supply and wiring.

Most x-ray apparatus is designed to operate on 200–250 volt a-c single phase service although high capacity three phase radiographic units are made.

Fluoroscopes and low power mobile units are generally operated from 110 volt lines. The power supply for the x-ray department should be separated from the other electrical circuits to avoid voltage variations.

Maximum daily line voltage variation due to causes other than the x-ray apparatus load should not exceed $2\frac{1}{2}$ per cent from the nominal circuit voltage.

The X-ray Section of the National Electrical Manufacturers' Association has published a table of recommended minimum power supply requirements for x-ray generators. (*Table XR4-10 Minimum Power Requirements*, National Electrical Mfg's. Association, New York City.) This table specifies the recommended size of the power supply transformer, size of the line wiring to the main switch in the x-ray room (based on a 100 ft. run), capacity of the main switch and wiring to the x-ray control for each of the standard classes of x-ray apparatus.

As noted previously, radiographic equipment is operated at relatively high milliamperages (up to 500 ma) for very short intervals — in fact the 50- to 100-bed equipment would be operated for less than three seconds at its maximum 200 ma rating and would draw a line current of approximately 60 amperes. Thus the load is on for too short an interval to cause any heating problems, but oversize feeder lines are required to prevent undue voltage drops. Like electric spot welders, x-ray radiographic equipment requires a large standby or maximum demand power supply capacity, although the kilowatt hour consumption is in accordance with commercial practice.

In addition to the line supply and wiring, it is necessary to provide wiring in conduit from the x-ray control to the transformer and auxiliary apparatus such as the x-ray table, tubestand, cassette changer, etc. The number of wires required and the position of the outlets for this wiring will vary with the different makes of equipment.

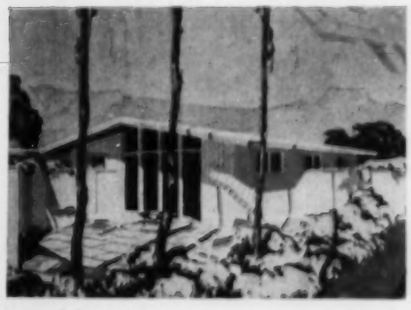
WINDOW WALL

A new type of window wall, designed to achieve low cost, has been used in six typical dwellings of the planned, 700-home Pueblo Gardens development in Tucson, Arizona. There are one-, two- and three-bedroom houses in the project, all one-story high.

In the small home the front window wall is 7 ft. high by 14½ ft. wide, while the rear door arrangement provides a glass door and adjoining window to give a daylight wall 7 ft. high by 6½ ft. wide. The horizontal bands of the windows are of an aluminum sash, half-panel, sliding type.

A two-bedroom design has the entire end of the living-dining area glass from floor to ceiling, providing a window wall 12 ft. wide by 7½ or 9½ ft. high. Another two-bedroom design has a window wall 10 ft. high by 12 ft. wide.

Characteristic of the various designs



Houses in large development project utilize new type "window walls" for low cost

are the low roofs with wide overhang, redwood siding applied vertically, concrete floors and large window areas.

Large window areas as well as solid walls are protected from the sun by the wide overhang, and, in addition, the dwellings are well insulated.

Structurally, the houses have been designed to eliminate the truss-type roof as well as hip and valley framing. The Pueblo Garden type of framing permits sloping ceilings, which are reported used to an advantage architecturally in visually enlarging the rooms.

In planning the whole project the original six homes are being built as models to study practical development of design theories and to conduct experiments in construction methods. Architects are Paul R. Williams and A. Quincy Jones, Jr., of Los Angeles. The houses are being built by the Del E. Webb Construction Co. of Phoenix. Libby-Owens-Ford Glass Co., Nicholas Bldg., Toledo 3, Ohio.

David Royter Photos

New furniture in the William Armbruster Collection. Left: 36 in. wooden cocktail table with raised rim. Right: sturdy club chair and sofa plus trim, glass and metal cocktail table

FURNITURE

New furniture pieces in the William Armbruster Collection of furniture, designed for and sold exclusively to architects, include a wing-type club chair and club sofa; a very unobtrusive metal and glass cocktail table; a light side chair, said to be maneuverable as well as comfortable; and a light, simple, 36-in. diameter cocktail table made of wood.

The club chair, while large in physical dimensions, is designed so as to not look at all bulky through general styling and by having the chair raised off the floor. The club chair and sofa are of sturdy construction with the legs extending half-way up inside the arm, although only short legs are visible. A special arrangement of webbing, frame and coil springs is said to prevent the nails that hold the webbing from working loose.

The side chair was designed especially for use in dining rooms, millinery departments and fitting rooms, and has been constructed so that both the rear legs and back of the chair will touch the wall when a chair is placed abutting the wall. Edgewood Furniture Co., Inc., 208 E. 27th St., New York 16, N. Y.

PREFABRICATED CLOSET

A new type of prefabricated closet with adjustable shelves and ball-bearing sliding doors has been designed to cut building costs and provide improved storage in the home and office.

Field test installations of the *Milo Cabinet-Wall* were reported to show the following advantages: (1) lower cost than comparable installation of stud and plaster construction; (2) closets can be used to form partitions; (3) closets use 25–40 per cent less space than conventional construction; (4) a unit cabinet can be assembled and installed by a carpenter and helper in about 90 minutes; (5) the cabinet-wall closets provide flexible floor to ceiling storage space.

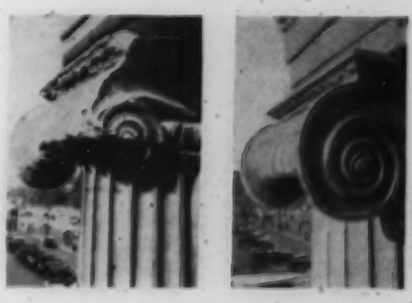
In the complete closets, shelves are said to be adjustable to any height; they come in standard 2-, 3- and 4-ft. widths and are shipped knocked down, prime painted and individually packaged.

Closet floors are elevated to keep out dust, and ventilation is provided in accordance with recommendations of the U. S. Bureau of Home Economics. The Mengel Co., Wood Products Division, P. O. Box 593, Winston-Salem, N. C.

STONEWORK RESTORATION

Recently introduced in this country is a process for the restoration of stonework that has deteriorated or been damaged.

The process, called *Deckosit*, utilizes stone, exactly the same as that in the



Mixture of stone and paste can be used to restore damaged, deteriorated stonework

original building or monument, with the stone being crushed and knitted together with Deckosit paste, 85 per cent stone to 15 per cent paste.

The decayed stone is cut away and the Deckosit stone mix is applied in

(*Continued on page 190*)

MANUFACTURERS' LITERATURE

Copper for Buildings

Modern Application of Sheet Copper in Building Construction. Technical treatise designed to serve as a "handbook for architects and sheet-metal contractors, draftsmen and artisans, students and apprentices." This book is a complete revision of the former Copper & Brass Research Ass'n. publication, *Sheet Copper Handbook.* New technical data derived from industrial research have been collated and reviewed.

Features that should especially appeal to architects are: design data for gutters, leaders, valleys, expansion joints; table of recommended weights and tempers; tables of stock sizes of sheet and strip; dead level roofs; roof cooling; roof gardens and pools; the use of factory-made roofing accessories; specifications covering all types of roofing and flashing, so arranged that individual clauses and alternate methods can be quickly chosen. Numerous tables, charts and illustrations are included. 144 pp., illus., Copper & Brass Research Ass'n., 420 Lexington Ave., New York 17, N. Y.

Wall Ties

Copperweld High-Strength, Non-Rusting Cavity Wall Ties. Brochure picturing application of wall ties made of high-strength alloy steel to which is welded a heavy covering of protective copper. A special feature, the V-shaped drip loop, is shown and specifications are given. 4 pp., illus. Copperweld Steel Co., Glassport, Pa.

Furniture

Everett Sebring Furniture. Portfolio of contemporary furniture by Everett Sebring, California designer of custom-made furniture and interiors. Included are pictures of chairside, end, lamp, coffee, nesting and drawer tables together with suggested furniture layouts. A data sheet lists prices, type of construction, wood and top finishes. 8 pp., illus. Everett Sebring Furniture, 1009 E. Green St., Pasadena 1, Calif.

Lighting

The Neo-Ray Louvered Ceilings (LC 1848 and ML 2448). Illustrates two types of louvered ceilings for use with fluorescent and spot lighting. Drawings show installation methods. A chart gives computed illumination values for various ceiling heights, lamp spacing, and wall and ceiling shades (light, medium or dark). 8 pp., illus. Neo-Ray Products, Inc., 315 E. 22nd St., New York 10, N. Y.

Sky-Glo Luminous Louver System. Contained in this bulletin are photographs, architectural drawings, engineering charts and specification tables on the *Sky-Glo,* Vinylite plastic, louvered lighting system.

Specifications give information on: composition, basic sizes and shapes of louver sections; dimensions and construction of supporting channels; channel couplings; suspension rod assemblies; and suspension rod couplings.

Described in detail are methods to utilize the louver system in four rooms of different dimensions. Each installation layout is accompanied by an itemized listing of all parts.

Formulas for calculating footcandle levels and illumination data are included. 28 pp., illus. Benjamin Electric Mfg. Co., Des Plaines, Ill.*

Cold Cathode Fluorescent Lighting Guide. This booklet begins with a brief statement defining cold cathode lighting which is followed by a listing of the characteristics of cold cathode lamps. Typical installations are shown and specifications, technical data are included. 6 pp., illus. Fluorescent Lighting Ass'n., 501 5th Ave., New York 17, N. Y.

Pittsburgh Permaflector Fluorescent Lighting Catalog 48-C. Presents a complete line of fluorescent luminaires, troffers, strips, accessories, etc., together with companion incadescent equipment which may be used in conjunction with fluorescent lighting for planned lighting installations. A section is devoted to "planned lighting" and how it is achieved through combination of fluorescent and incadescent equipment. Installation details, suggested applications and utilization tables are included for all units. Complete engineering data and specifications are given. 52 pp., illus. Pittsburgh Reflector Co., Oliver Bldg., Pittsburgh 22, Pa.*

Day-Line Industrial Fixtures (Bulletin 30-A-2). Covers revised listing of *Day-Line* industrial fluorescent fixtures. Additions to line include new turret sockets and closed end reflectors for two-lamp and three-lamp 40-watt fixtures. 16 pp., illus. Day-Brite Lighting, Inc., 5411 Bulwer Ave., St. Louis 7, Mo.*

Spero 5 Lines of Electrical Products. Describes complete line of fluorescent luminaires, reflectors, floodlights, vapor-proof units and materials for electrical construction. Engineering data is given together with dimensioned drawings, candlepower distribution diagrams, utilization coefficients and illumination levels for various fluorescent fixtures. 41 pp., illus. The Spero Electric Corp., 18222 Lanken Ave., Cleveland 19, Ohio.*

Stainless Steel Pipe

Taylor Forge Stainless (Bulletin 483). Drawings, dimensions and prices are given for new type fittings and flanges available in Stainless 304, 347, 316 and other materials. 4 pp., illus. Taylor Forge & Pipe Works, P. O. Box 485, Chicago 90, Ill.

Drains, Plumbing Specialties

Wade Drains. Comprehensive catalog featuring wide variety of drains and fittings, expansion joints, sealed air chambers, grease interceptors, sump pumps and other plumbing specialties. The drain section is handily arranged in that a maximum of information is given in one place; photos, drawings, descriptions, dimensions, weights, accessories, etc. are given on the same page for each item.

Roof leader sizing and selection information, said to be based on both local code requirements and a rainfall map of the U. S., are provided to save tedious computation and guesswork. Tables are given for the correct sizing of grease interceptors. 80 pp., illus. Wade Mfg. Co., Elgin, Ill.

Housing

Housing America. A study of present and future dwelling requirements for the U. S. The brochure reviews the present housing shortage, its underlying causes, and suggests corrective measures to initiate a nation-wide housing program. Major sections of the brochure include: (1) Mass Housing — a Major Issue; (2) Planned Communities — Utilities; (3) Effect of Fuels on Community Planning; (4) Analysis of an Individual Home Community Development; (5) Appendix (describes large rental housing projects in progress). 28 pp., illus. The Ric-wiL Co., Union Trust Bldg., Cleveland, Ohio.*

Food Service Equipment

Handbook of Food Service Equipment. A complete guide to the selection of equipment for the preparation and serving of food in hotels, schools, restaurants, hospitals and industrial organizations. Complete specifications are given, describing in detail the type of fabrication and materials used. 120 pp., illus. S. Blickman, Inc., Weehawken, N. J.*

Quality Homes

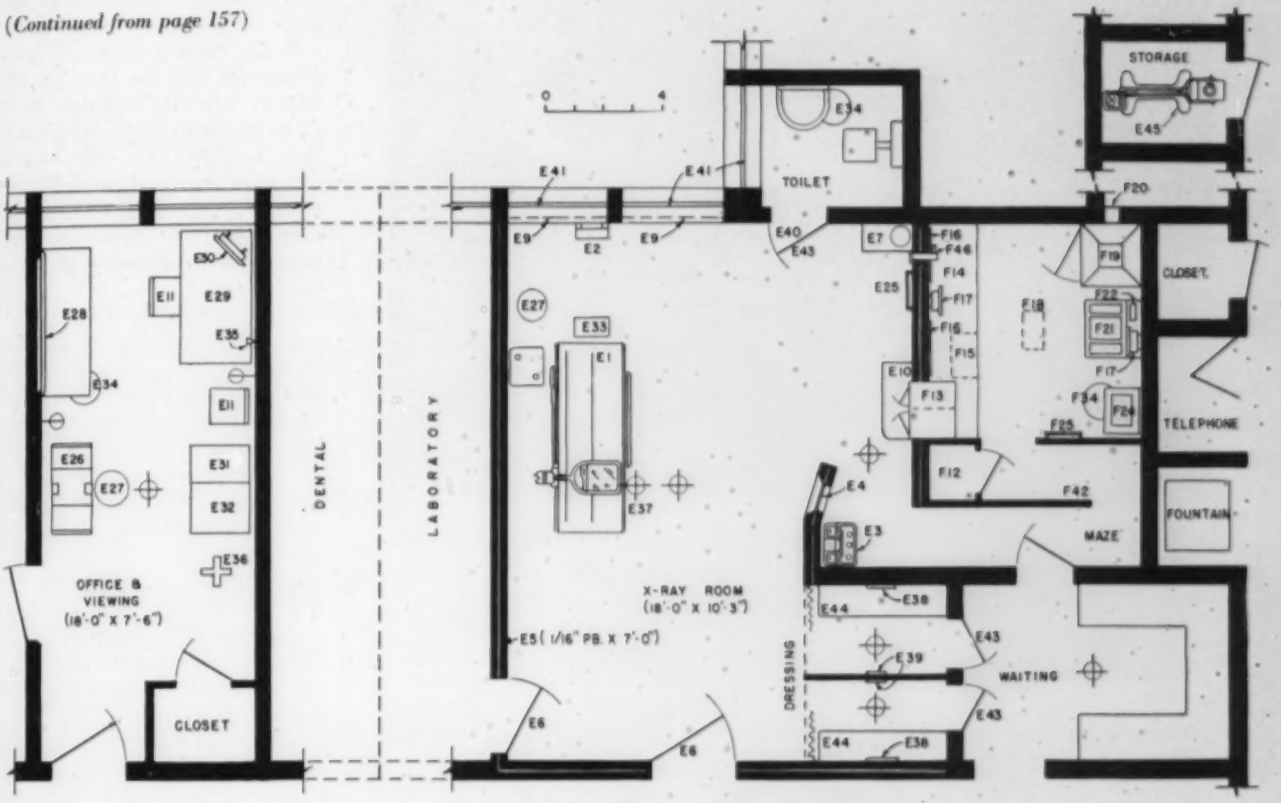
A Quality Home Can Cost Less. Booklet traces the construction of an actual house, and through a step-by-step analy-

(Continued on page 214)

* Other product information in Sweet's File, 1948.

RADIOGRAPHIC SUITE FOR 40-BED GENERAL HOSPITAL

(*Continued from page 157*)



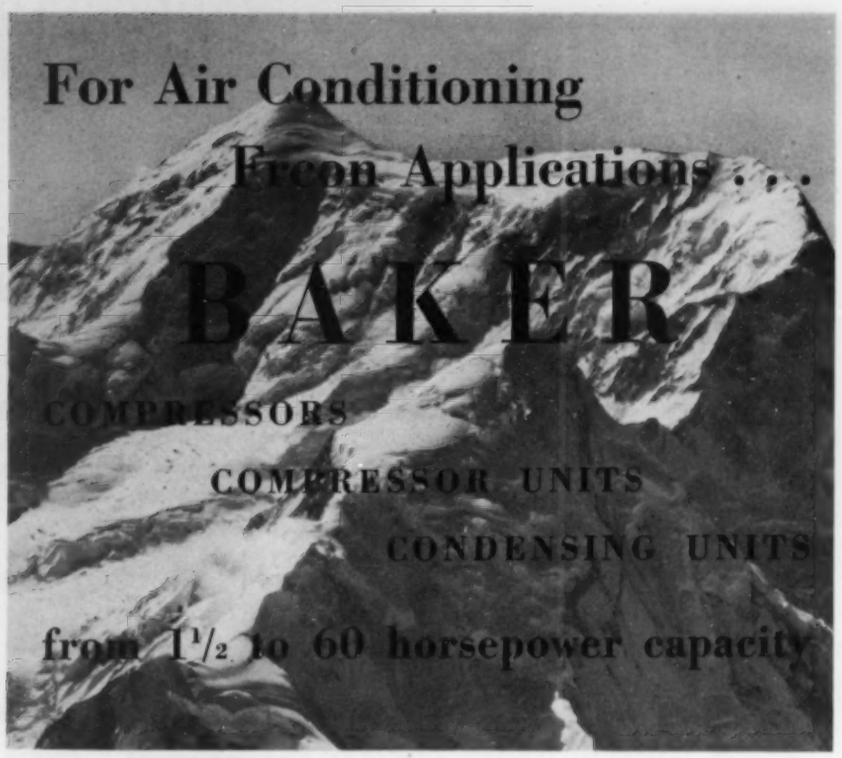
Legend for 40-Bed Hospital Suite

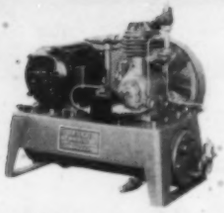
An alternate plan for the 40-bed General Hospital includes a larger radiographic and fluoroscopic unit (200 ma) and a horizontal cassette changer instead of the wall mounted type as used in the standard plan

E- 1 1-Combination 100 ma radiographic and fluoroscopic x-ray unit
E- 2 1-Wall mounted cassette holder
E- 3 1-Control Unit (part of Item E-1)
E- 4 1-Leaded glass view window *
E- 5 1-Lead lining *
E- 6 2-Lead lined door, lightproofed *
E- 7 1-Barium sink *
E- 9 2-Lightproof shade *
E-10 1-Low cabinet for supplies *
E-11 2-Straight chairs (1 executive type for desk) †
E-25 1-Towel bar †
E-26 1-Stereoscope
E-27 2-Adjustable stool †
E-28 1-Wall mounted four-film illuminator
NOTE: Toilet furnishings not included in layout

* Part of room construction
† Part of furnishings

E-29 1-Executive-type desk †
E-30 1-Desk mounted single-film illuminator
E-31 1-Filing cabinet letter size, 4 drawers †
E-32 1-Film filing cabinet, 3 drawers
E-33 1-Footstool †
E-34 2-Waste paper receptacles †
E-35 1-Telephone outlet †
E-36 1-Costumer †
E-37 1-Fluoroscopic ceiling light *
E-38 2-Hook strip †
E-39 2-Mirror †
E-40 1-Hook on door †
E-41 3-Obscure glass *
E-43 3-Lightproofed doors *
E-44 2-Built-in seats *
E-45 1-Shockproof Mobile X-Ray Unit

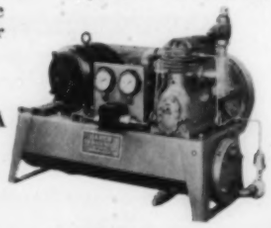


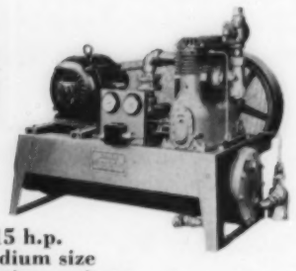


1½ to 5 h.p. capacity in units built around the Model 32BA Compressor

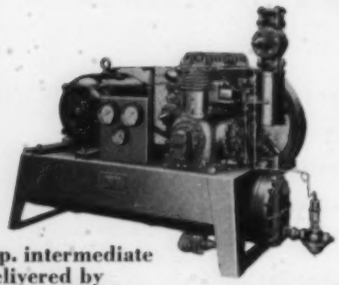
Wherever Freon is used, Baker units are famous for top performance and low-cost operation. Over 40 years of development have gone into the perfection of the Baker line, and today it stands as one of the world's most advanced in design, engineering and precision manufacture. Write today for address of the nearest distributor.

5 to 7½ h.p. available in units with the Model F32BA Compressor

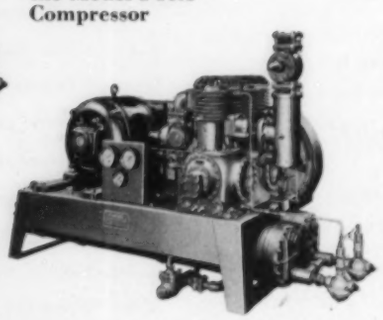




10 to 15 h.p. for medium size installations using the Model F40A Compressor



20 to 30 h.p. intermediate capacity delivered by units having the Model F14BA Compressor



40 to 60 h.p. for high capacity installations furnished in units based on the F15BA Compressor

H-2

Zone balanced · Engineered

BAKER AIR CONDITIONING AND REFRIGERATION

Factories at Omaha, Nebraska and South Windham, Maine . . . General Offices at South Windham, Maine

THE RECORD REPORTS

(*Continued from page 24*)

cent over June, residential up 45 per cent over July of last year and down 2 per cent from June, and heavy engineering works up 31 per cent over July of last year and 1 per cent over June.

Gains ranging from 15 per cent in Minnesota and the Dakotas to 123 per cent in New England were reported for all its reporting districts by the Corporation in July over the corresponding month of last year, with the exception of the region comprised of western Missouri, Kansas, Nebraska, and Oklahoma where a decline of 65 per cent was shown.

On a cumulative basis, all 15 regions showed an increase for the first seven months of the year compared with the corresponding period of last year. The upstate New York district led this advance with a gain of 72 per cent followed by the midwestern area of northern Illinois, Indiana, Iowa, Wisconsin and northern Michigan with a gain of 60 per cent.

MATERIALS ROUNDUP

Ceramic wall and floor tile: Output for the first half of this year 24 per cent greater than in the same period last year — Tile Council of America.

Brick and structural clay tile: Production for the first six months of 1948 ahead of the record postwar production in 1947, with inventories adequate to meet the building demand. — Structural Clay Products Institute.

Flooring: Production of Northern Hard Maple, Beech and Birch flooring continued its upward trend in the first half of 1948, and it is now possible for the manufacturers to furnish this flooring in all grades, thicknesses and face widths. Shipments of Northern Hard Beech Flooring for the first half of the year increased 81.7 per cent in comparison with the first six months of 1947. — Maple Flooring Manufacturers Assn.

Steel Products: Shipments of finished steel products in the first half of 1948 exceeded any half-year in war or peace. — American Iron and Steel Institute.

DATA SHEETS ISSUED

Data sheets on subdivision exhibits for incorporation in local editions of FHA Land Planning Bulletin No. 3, *Neighborhood Standards*, have been published by FHA to help subdivision sponsors and their technicians in preparing exhibits which will permit the FHA to render more rapid service on proposed residential developments.

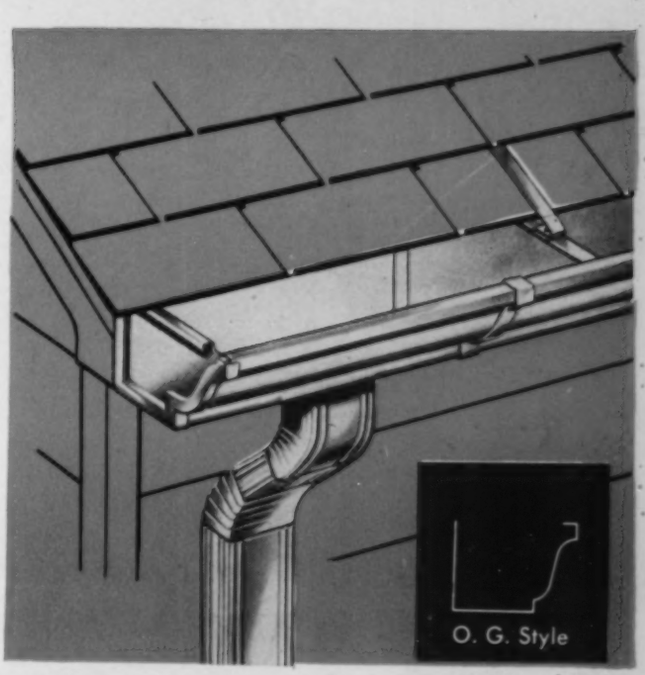
The data sheets contain a description of the advisory services available to

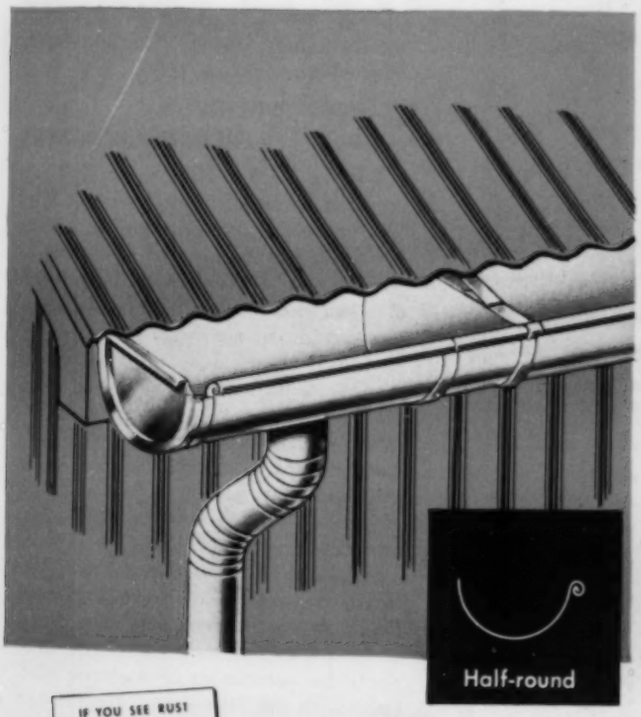
(*Continued on page 162*)

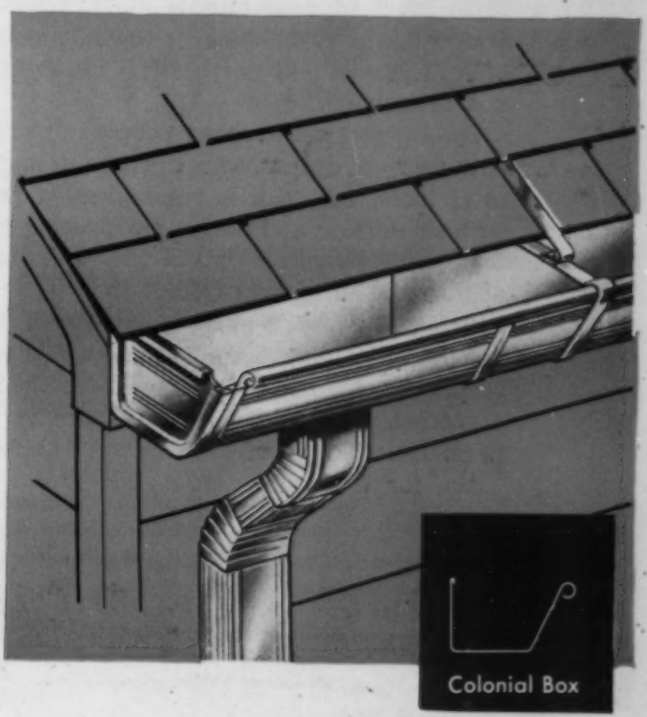
REYNOLDS *Lifetime* ALUMINUM GUTTERS AND DOWNSPOUTS

Visually, a non-staining white metal eave trim. Functionally, an efficient rain carrier of rustproof permanence at about half the cost of other rustproof materials. 5" gutters in the designs shown, each in either plain or stippled-embossed finish. Matching downspouts and complete fittings. Application by slip connectors. Write for literature.

REYNOLDS METALS COMPANY
Building Products Division, Louisville 1, Ky.
Offices in 32 Principal Cities







IF YOU SEE RUST YOU KNOW IT'S NOT ALUMINUM

REYNOLDS METALS

REYNOLDS *Lifetime* ALUMINUM BUILDING PRODUCTS

Reynolds Pioneering made Aluminum Competitive . . . *take advantage of it!*

WORLD'S LARGEST PRODUCER OF ALUMINUM BUILDING PRODUCTS:

Shingles, Clapboard Siding, Corrugated and 5-V Crimp, Snap-Seal and Standing Seam Roofing, Weatherboard Siding, Built-up Roofing, Nails, Gutters, Wall Tile, Windows, Reflective Insulation, the "Alumi-Drome" (prefabricated utility building).

ROOMS WITH *Oak Floors*
HAVE STYLE ADAPTABILITY

With most of your clients, oak flooring will always be the first choice for new homes because of its inherent natural beauty, durability and lasting economy.

But, as you know, many people want changes . . . new rugs, drapes, wallpaper, paint and furniture. Here, too, oak is recommended because, with its warmth and charm, oak flooring complements the beauty of these new surroundings whatever their style or color.

For wall-to-wall carpet, oak floors offer a smooth, firm—yet resilient—base which protects carpeting and makes cleaning easier. And when carpeting wears out, or owners tire of it, the permanent beauty of oak is always there.

So, for long-time adaptability, start with oak floors.

ASK FOR ARCHITECTS' DATA BOOK—*which gives quick and usable information for specifying, laying, finishing and maintaining oak floors. Available from your local oak flooring dealers or from the National Oak Flooring Manufacturers' Association, 814 Sterick Building, Memphis, Tenn.*

OAK FLOORS
BEAUTY • DURABILITY
ADAPTABILITY • ECONOMY

THE RECORD REPORTS

(*Continued from page 160*)

development sponsors from the FHA, and of subdivision exhibits which may be needed at various stages of planning. They also include suggestions through which maximum benefits may be obtained from expenditures for technical assistance. Illustrations and check lists included will be useful aids to land planners, engineers and other technicians in the preparation of drawings and documents.

Copies of the new data sheets may be obtained on request to local FHA offices.

APPRENTICES ON INCREASE

The number of apprentices employed in the construction industry reached an all-time high of 132,114 on July 1, an increase of 32,000 over the number employed at the same time a year ago, the Bureau of Apprenticeship, U. S. Department of Labor, reports.

California retained the lead with 19,974 construction trades apprentices, followed by New York with 11,620, and Ohio with 9578. The following totals were on file for the seven major craft groups: woodworking trades, 47,215; pipe trades, 20,756; electrical trades, 18,867; trowel trades, 18,790; sheet metalworking, 10,464; painting, 9072; other building trades, 6950.

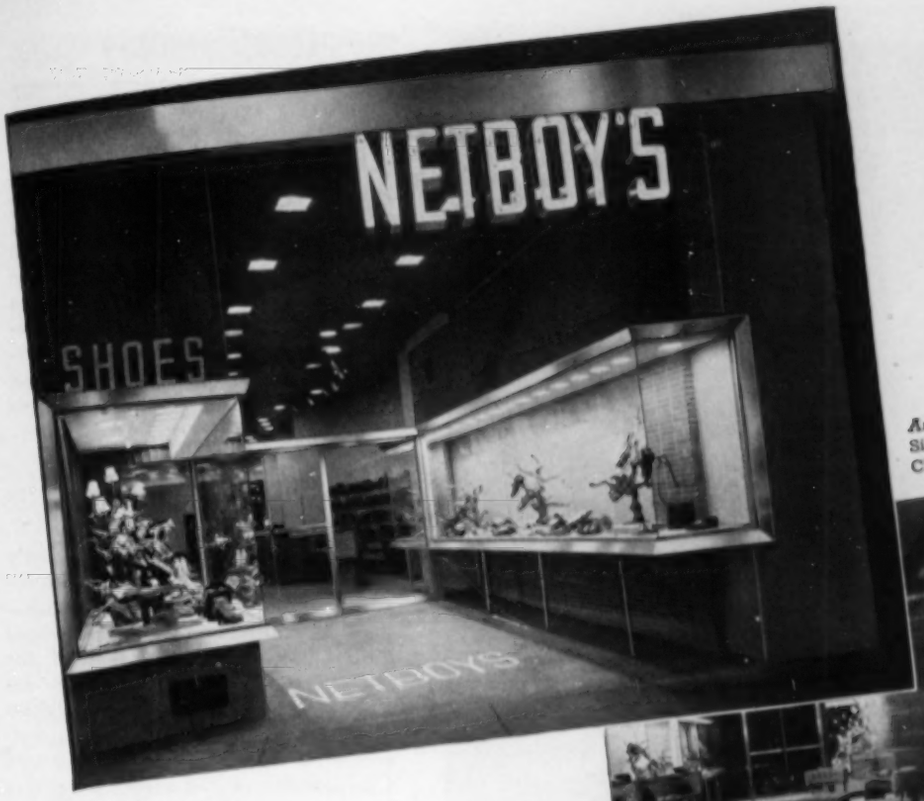
CALIFORNIA NEEDS ENGINEERS, DESIGNERS

With a $250 million state building program launched by Governor Earl Warren as his five-year project, State Architect Anson Boyd of California is making a nation wide appeal for structural engineers and architectural designers and draftsmen who are urgently needed by the Division of Architecture.

More than 150 structural engineers, designers, structural engineering draftsmen, specification writers, estimators and mechanical and electrical engineers are required immediately for the design of new hospitals, institutions, office buildings, and for approving school plans under California's earthquake law, Mr. Boyd reports. The State Personnel Board is cooperating with Mr. Boyd and requests architects and engineers to apply for permanent civil service positions with the Division of Architecture by writing to the Recruitment Section, State Personnel Board, Sacramento, California. Architects and engineers are requested to indicate the salary at which they would accept California employment, and to submit their employment history.

Qualified applicants for architectural

(*Continued on page 164*)



Architects:
Sidney H. Morris & Associates,
Chicago

"SELLEVISION" *Brings the Entire Store* INTO THE PICTURE

WOULD any woman pass up a store like this? It isn't likely. The front has *Sell*evision to make the charming interior clearly visible from the street. Customer contact is immediately established.

*Sell*evision as applied by specialists in modern store design imparts distinctive identity . . . especially when Brasco Safety-Set Store Front Construction is utilized. With Safety-Set's extremely low sash height more glass is exposed to achieve maximum visibility.

The complete line includes a wide choice of attractive assemblies in handsome stainless steel and anodized aluminum. Unusual effects are easily obtained with our standard members requiring stock size millwork only. Heavy-duty bars with tubular steel reinforcement provide ample protection for heightened areas and larger glass loads.

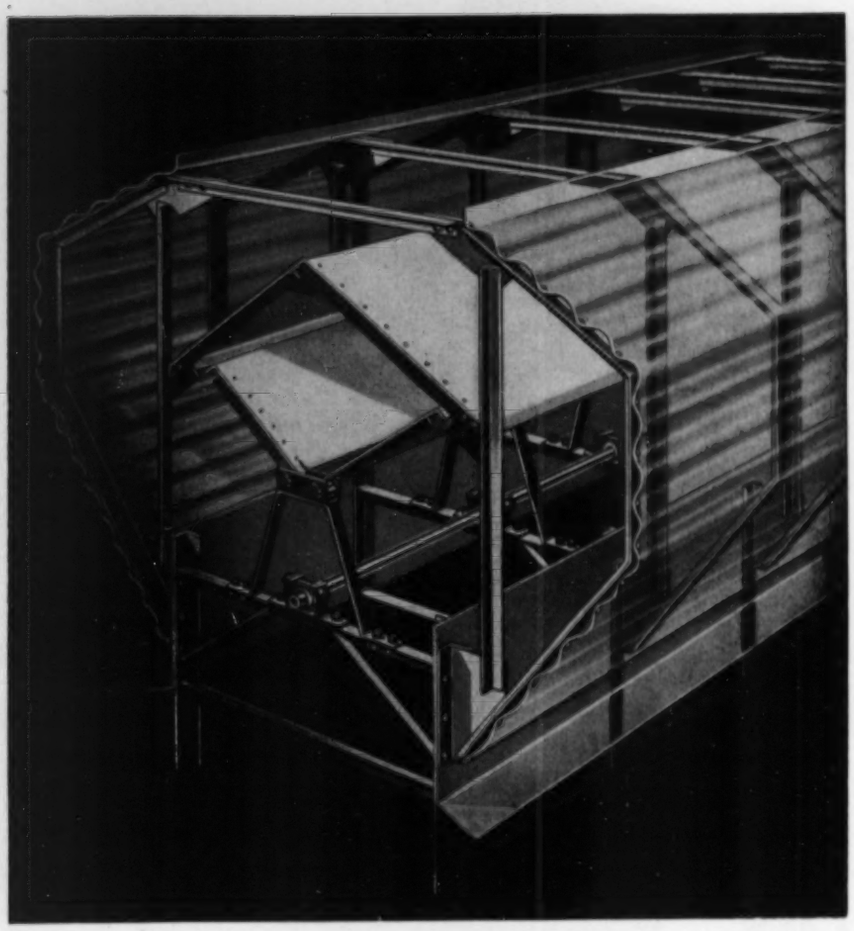
For store fronts with *Sell*evision, Safety-Set Construction completes the picture . . . frames it most securely and effectively.

★ A COMPLETE LINE FOR EVERY DESIGN ★

Brasco
SAFETY-SET
STORE FRONTS

BRASCO MANUFACTURING CO.
HARVEY • (Chicago Suburb) • ILLINOIS
Specialists in Metal Store Front Construction for more than 35 Years

Copr. 1948 by Brasco Manufacturing Co.



BURT VENTILATORS BOOST PRODUCTION EFFICIENCY AND PLANT PROFITS

The present increased costs of labor and materials place a high premium on production efficiency.

Burt Ventilators offer an economical and quickly available source for permanent production improvement. Cost-cutting is achieved through increased production from better working conditions; by improved product quality; less absenteeism and fewer accidents.

A complete line of types and sizes and a century of ventilating experience assure you a properly engineered and efficient ventilating system when Burt does the job.

SEE SWEET'S OR WRITE FOR CATALOG AND DATA SHEETS

The BURT MFG. Co.

48 E. South Street Akron 11, Ohio, U.S.A.

VENTILATORS • LOUVERS • OIL FILTERS • SHEET METAL SPECIALTIES

THE RECORD REPORTS

(*Continued from page 162*)

design and drafting positions will be given examinations consisting of an appraisal of work samples and an oral interview in such places throughout the country as the number of applicants permit. Structural, mechanical and electrical engineers, estimators and specification writers, who meet the necessary professional qualifications will be given written examinations.

COMPETITIONS

Lighting

In the interest of properly, pleasantly and profitably planned lighting and the advancement of the science of illumination, The Industrial and Commercial Lighting Equipment Section of the National Electrical Manufacturers Association invite lighting installation planners to enter case studies completed in 1948 in the Merit Award Competition which closes on January 15, 1949. Five groups of planners — electrical contractors, electrical wholesalers, architects and engineers, utility lighting and power men, and users of industrial and commercial lighting — are eligible to submit up to three separate entries showing a single installation in the field of industrial, school, store, institutional or outdoor lighting by means of photographs, drawings, and detailed

(*Continued on page 166*)

EMERY ROTH, A.I.A.

Emery Roth, New York architect well known for his work in the hotel and apartment house fields, died on August 20 at the age of 77.

A native of Czechoslovakia, Mr. Roth had been in this country since 1884. He was affiliated with the firm of Burnham and Root of Chicago before opening his own office in New York in 1898. In 1935 he took his sons, Julian and Richard, in with him, changing the name of his firm to Emery Roth & Sons.

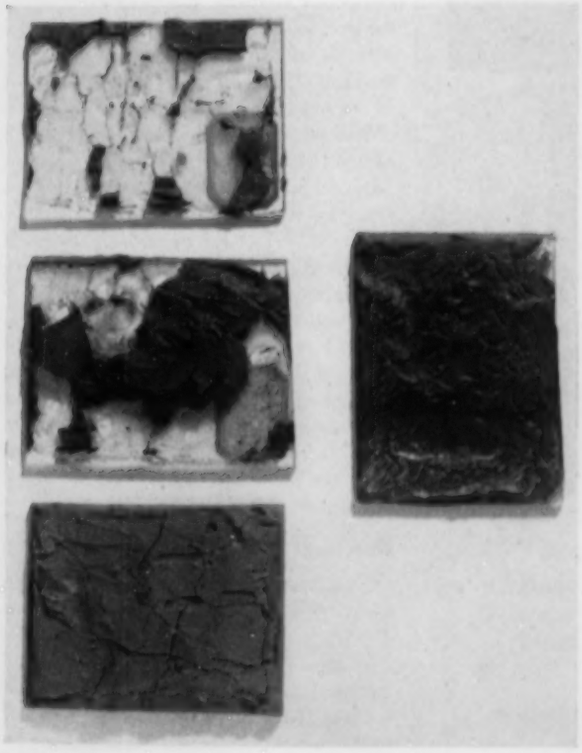
Among the many prominent buildings of his design are the Ritz Tower, the St. Moritz, Oliver Cromwell, San Remo, Mayflower, Drake and Fifth Avenue Hotels, in New York City, and the Hotel St. George in Brooklyn. Only this year he was awarded the Apartment House Medal of the New York Chapter, A.I.A., for the best apartment house designed since 1940 — the one at 300 E. 57th St., New York.

Mr. Roth was a member of the American Institute of Architects and the New York Society of Architects.

SOUND CONDITIONING

RESULTS OF 8-YEAR TEST ON ADHESIVES FOR ACOUSTICAL TILES

A factor of importance in sound conditioning is selection of an adhesive that will hold acoustical ceiling tiles in place permanently. Results of an eight-year test on twelve brands of acoustical cement reveal marked variations in characteristics, and indicate that architects should specify not only the acoustical material but also the proper cement to keep it in place.



TEST SAMPLES—AFTER 8 YEARS

The three test samples of acoustical adhesives above (left) became brittle and cracked loose from their glass mountings after 30 days of accelerated drying at 120° F. The Armstrong sample at right, tested at the same time, still remains plastic today, after eight years. Surface marks are thumbnail indentations made during periodic inspections.

*TRADE-MARK REGISTRATION APPLIED FOR.

In 1940, Armstrong Cork Company's Research Laboratory began tests comparing Armstrong's Acoustic Cement with other cements on the market. Samples of twelve acoustical cements—including Armstrong's—were applied to glass and placed in an oven for thirty days at 120° F. For eight years these test samples have been observed regularly. The unretouched photo at left, taken recently, shows the significant effects of the test.

For long, dependable service an acoustical cement should have strong initial bond, minimum longitudinal shrinkage, and remain plastic indefinitely. The test showed that only Armstrong's Acoustic Cement met all three requirements with a high rating. At the end of the 30-day drying-out test, nearly all of the other cements had become hard and brittle, most of them cracking away from the glass. The Armstrong sample remained plastic and firmly bonded. Made with a varnish-type base, this cement maintains plasticity for years. This allows for expansion and contraction of the acoustical material with temperature and humidity changes. After eight years, Armstrong's Acoustic Cement showed shrinkage 1½ to 4 times smaller than the other cements tested. And it had twice the initial bond required by government specifications.

Armstrong is the only large manufacturer of acoustical materials that makes cement for their application. The dependability of Armstrong's Acoustic Cement stems from Armstrong's 44 years of experience in the manufacture of adhesives. Armstrong Cork Co., Acoustical Dept., 2410 Stevens St., Lancaster, Pa.

ARMSTRONG'S ACOUSTICAL MATERIALS

CUSHIONTONE® • CUSHIONTONE F • TRAVERTONE* • ARRESTONE® • CORKOUSTIC® • ARMSTRONG'S ACOUSTIC CEMENT

For "extra beauty" in Slabs
...ATLAS WHITE CEMENT

You'll note added beauty in Architectural Concrete Slabs made with a matrix of Atlas White Cement. It brings out *full* sparkling whiteness or sets off rich color values in pigments and aggregates. And the crisp, smart appearance of the slabs lasts, undimmed, through years of wear and exposure.

Atlas White Cement also provides beauty and utility for Stucco, Terrazzo and Cement Paint, as well as Slabs. Such a matrix has the uniform clarity to complement the desired colors, whether in contrast or blend.

Atlas White conforms with ASTM and Federal specifications for portland cement. It has the same advantages for concrete and is used in the same way. Atlas White concrete stays fresh, colorful . . . and it cleans easily. Maintenance costs are low.

For further information on the uses of Atlas White Cement, see SWEET'S Catalog, Section 4B/2 and 13B/8, or write to Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

AR-C-24

FOR BEAUTY AND UTILITY
ATLAS WHITE CEMENT
FOR TERRAZZO, PAINT, SLABS, STUCCO

"THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries*
Sunday Evenings—September to June—ABC Network

THE RECORD REPORTS

(*Continued from page 164*)

information of equipment and photometric data. In addition to Merit Award Certificates, three $100 cash prizes and Gold Seal Certificates for each entry group will be awarded, and winning designs will be displayed, at the Third International Lighting Exposition and Conference to be held in Chicago March 29 to April 1, 1949. A complete program announcement and official entry blank may be obtained from the Third International Lighting Exposition, 326 W. Madison Street, Room 818, Chicago 6, Ill.

Welding

The James F. Lincoln Arc Welding Foundation announces the Second Annual Engineering Undergraduate Award and Scholarship Program, from September 15, 1948 to April 1, 1949, for students to compete in the preparation of papers on welding. Resident engineering undergraduates of a United States school, college or university offering a curriculum in any branch of engineering or architecture leading to a degree are eligible to submit papers in one or more of the following categories: Design, Maintenance and Repair, Welding Fabrication, Research and Development. In addition to 77 student cash prizes totaling $5000, the competition again offers scholarship funds amounting to $1750 to the institutions in which the three top award students are registered. The Rules of the Program, reviewed and approved by Engineering Department heads of 14 leading colleges, may be obtained by writing The James F. Lincoln Arc Welding Foundation, Cleveland 1, Ohio.

Community Planning

The search for finding plans for an ideal neighborhood has taken the form of a nationwide contest sponsored by the Community Development and Shopping Center Committee of the National Association of Home Builders. Both regional and national awards will be made in each of five entry classifications: (1) best small groups of single family homes under 50 units with emphasis on economy; (2) best single family group of over 50 units with emphasis on economy; (3) best residential community; (4) best garden apartment or multiple group; (5) best suburban shopping center where construction is 25 per cent complete. Winning projects will be displayed at the Home Builders Exposition in Chicago in February 1949. The closing date for entries is November 1. Complete information can be obtained

(*Continued on page 168*)

Plywood is engineered wood!

NATURAL woods, going through the skillful processes of manufacturing, result in PLYWOOD—the engineered wood. It is wood itself, built for new and greater flexibility, dependability, and value. Plywood is MADE to lend itself to architectural plans, to the modern uses of wood, to unique applications.

PLYWOOD, INC. provides completely efficient service—featuring every kind of panel, from Western soft woods to the finest hardwoods—and panels to your own specifications

The richness of superb plywood lends itself to the modern home.

An executive office or conference room dignified with plywood.

Plywood adds distinction to the lobby and rooms of an institution.

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Los Angeles, Cal.

Remember The Original Massillon Bar Joist – We Make 'em Every Day

— So You Want To Reduce Construction Costs

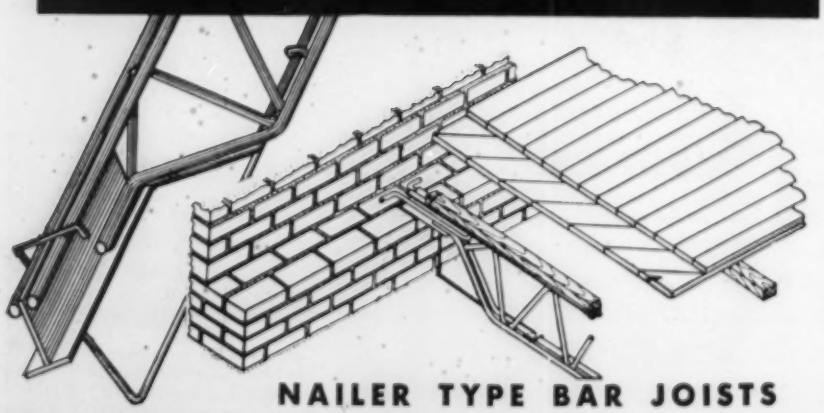
Well, then, WHY do you BUILD floor supports piece by piece on the job?

Why don't you reduce this costly time and labor with Macomber Bar Joists?

Why don't you save money instead of spending it trying to run pipes, ducts and conduit through solid floor supports?

Why don't you REDUCE dead load and footings instead of increasing them?

Why don't you call us for price and delivery estimates? We made the original Bar Joist in 1923. We've been saving builders money ever since.



NAILER TYPE BAR JOISTS

V-BAR JOISTS AND PURLINS • V-STUDS • TRUSSES • LONGSPANS • DECKING

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CANTON, OHIO

IN MEXICO D. F.—MACOMBER DE MEXICO S.A. CEDRO 500

STANDARDIZED STEEL BUILDING PRODUCTS

THE RECORD REPORTS

(*Continued from page 166*)

from the National Association of Home Builders, 1028 Connecticut Ave., N.W., Washington, D. C.

Research Progress Noted

The Construction Industry Information Committee is currently compiling a report on the magnitude of organized research designed to lower the cost and raise the quality and performance of construction methods and materials. Only suggestive of the scope of this research are the available figures on annual money expenditures — $15 million by private industry alone, another $1.5 million by federal agencies and immeasurable amounts by schools, special grants and fellowships. Incalculable, too, are the contributions resulting from the interchange of on-the-job ideas, informal research and developments from skilled workmen; independent architects, engineers, designers; alert and competitive contractors, builders, suppliers, salesmen and practical-minded trade publications.

Although private industry or associations of private industry are conducting the major part of the organized research, universities, foundations and private laboratories have also made significant contributions, as the report points out. Notable among these in the field of economic house construction are the University of Illinois, Purdue University, the Modular Service Association and the Pierce Foundation. Through the testing work of the National Bureau of Standards and through such specialized agencies such as the Forest Products Laboratory and housing bureaus, the federal government also is aiding the building research program.

The current study specifically reviews basic and applied research on cement and concrete; forest products; paints, lacquers and varnishes; gypsum products; structural clay products and glass and glass products. Subsequent studies on other major construction components will follow.

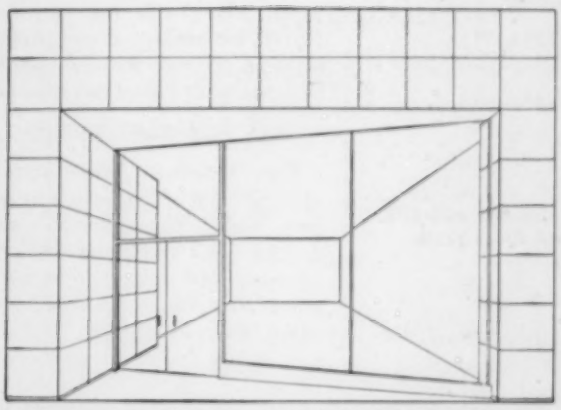
"Parklets" for Pittsburgh

The architectural firm of Mitchell and Ritchie of Pittsburgh are currently planning four neighborhood "Parklets" — unique features in their city's active clean-up and beautification campaign. These small parks, which are privately financed but planned in cooperation with city officials, are designed primarily as beauty spots and rest areas for mothers with babies and small children and for older people who now lack facilities for relaxation and recreation in their

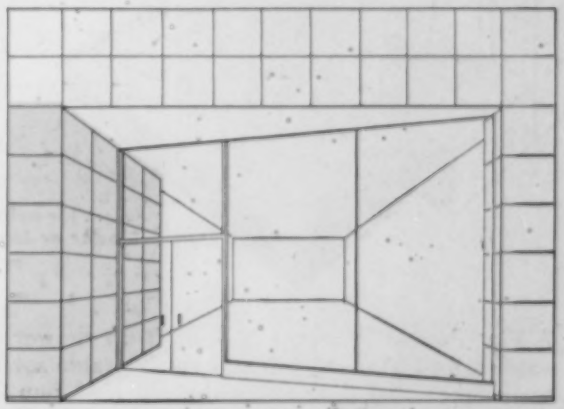
(*Continued on page 170*)

Functions of Vitrolite in a Visual Front

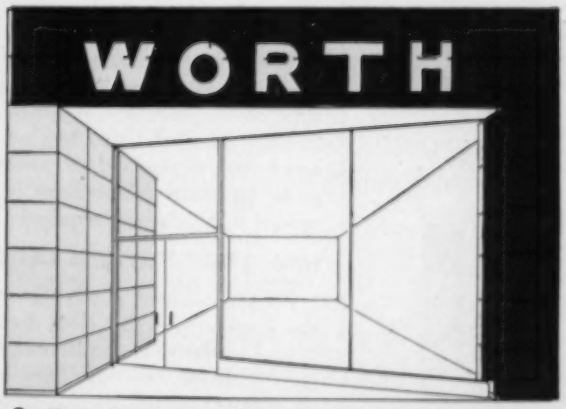
Smart architectural design joins hands with a colorful, practical surface material when you include *Vitrolite** in your Visual Front plans. *Vitrolite's* uses are as broad as your imagination. Illustrated below are particularly valuable functions of *Vitrolite* in the popular Visual Front design.



1. Here are the basic lines of a Visual Front, designed so that passersby see the entire store interior through a clear glass front. But glass can do more—it can direct attention to the front and the interior by effective use of *Vitrolite* facing on solid areas.



2. Alamo tan *Vitrolite* adds sparkling color to attract attention to the store. It starts at the sidewalk, extends through the clear glass front to unite exterior and interior and lead the eyes of shoppers into the store. *Vitrolite* makes the store more inviting.



3. Now add the sign fascia and pilaster in a contrasting color to complete the framing. To display the store name, its product or its trade-mark, sandblast the *Vitrolite* or laminate on the fascia a contrasting color of *Vitrolite.*

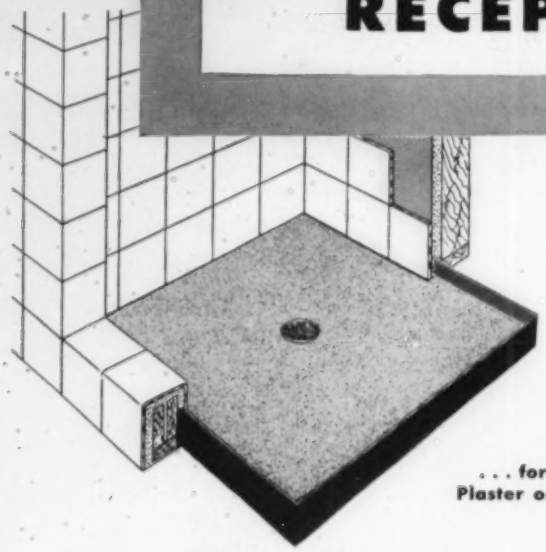
Here's color, beauty and practicality in a material that doesn't lose its look of newness, doesn't need refinishing. *Vitrolite* is made in cadet blue, peach, jade, red, light gray, Alamo tan, mahogany, white and black. Colors blend well with each other and harmonize with shades currently popular in interior decoration. Your L·O·F distributor will be glad to furnish factual data. Write for our book which illustrates *Vitrolite* applications in their true colors. Libbey·Owens·Ford Glass Company, 45108 Nicholas Building, Toledo 3, Ohio.

*®

VISUAL L·O·F FRONT

LIBBEY·OWENS·FORD
a Great Name in GLASS

Fiat PRECAST SHOWER RECEPTOR



STANDARD SIZES

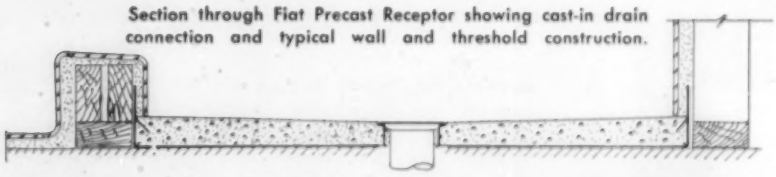
32" x 32"
36" x 36"
40" x 40"

. . . for built up showers with Tile, Plaster or Structural Glass Walls

A Fiat Precast Receptor in a built up shower is assurance of a water tight leakproof job at a considerable saving in cost over a hand fabricated floor using the old lead pan method. Walls are easier to handle with a solid one-piece foundation provided by a Fiat Precast Receptor.

A brass drain for 2" waste and the galvanized steel side wall flange is cast integral with the terrazzo forming a complete one-piece floor that is not affected by shrinkage or movement of supporting wood members.

Section through Fiat Precast Receptor showing cast-in drain connection and typical wall and threshold construction.



Fiat glass doors make showers more attractive in appearance and have a definite practical value to the user. Three types available: Dolphin, the finest in door construction, solid brass chromium plated frame. Zephyr, a satin finished aluminum frame door in the medium price class. Neptune, a low cost aluminum frame door. All Fiat doors are made for opening 24 inches wide.

Dolphin or Zephyr Door on built-in Fiat Shower.

Fiat

In Canada—Fiat showers are made by the Porcelain and Metal Products, Ltd., Orillia, Ontario

Metal Manufacturing Company

1203 Roscoe Street • Chicago 13, Ill.

THE RECORD REPORTS

(*Continued from page 168*)

own neighborhoods. When completed, Mitchell and Ritchie's four parks will serve as "Demonstration Areas" to stimulate the development of other "Parklets" under the sponsorship of responsible community groups. These groups will be required to assume the maintenance of the areas until such time as the City can completely integrate them with its park program. However, the City will assist in obtaining sites, and special donation funds will be available for initial construction costs under the paternal purveyance of Pa Pitt's Partners, a privately financed committee which, along with the Mayor's Committee, has organized and is effectively carrying through the well-rounded city betterment and modernization program.

HOMES FOR PARAPLEGICS

The Veterans Administration has awarded John Shober Burrows, Jr., New York City architect, a contract to develop basic house plans for paralyzed veterans who are eligible for federal grants to purchase or remodel homes for wheel chair living. Mr. Burrows, who has already designed a number of homes for use by paraplegics, will prepare basic plans for two-, three- and four-bedroom frame units with a one-car garage. Each unit will include a combination utility and work room (no basement), and special features such as ramps instead of steps or stairs, extra-wide halls and doorways, larger rooms, special bathroom arrangements and fixtures.

Veterans who qualify are entitled to a grant not to exceed 50 per cent of the total cost of the home or a maximum of $10,000 with which to buy or build a new home, to remodel an existing home or to liquidate indebtedness on such a special home already acquired.

NEW YORK PREPARES LAWS

For presentation at the next session of the Legislature, the New York State Joint Legislative Committee on Housing and Multiple Dwellings has prepared amendments to clarify the present laws and has drafted a Multiple Dwelling Law which would be state-wide in application. Since the present Multiple Dwelling Law, passed in 1929, and the Tenement House Law of 1901 apply only to New York City and Buffalo respectively, this new bill is aimed to correct and prevent conditions menacing health, safety and welfare in all heavily populated areas throughout the state. Copies of this proposed bill may be obtained from the Committee's office, 37 West 42nd Street, New York.

(*Continued on page 172*)

Announcing Kno-Draft Ceiling Smudge Control

Now you can control tough smudging problems. When exceptionally sooty, smoky or dusty air conditions are expected, or where rough textured, dirt-catching ceilings are employed, Kno-Draft Anti-Smudge Cones give the utmost in protection—and increase the attractiveness of the diffuser besides.

How it works

Under normal conditions, all Kno-Draft diffusers can be adjusted so that their specially designed deep shoulder rims will deflect the discharge air away from the ceilings and prevent smudging. However, under the abnormal conditions mentioned above, the use of Kno-Draft anti-smudge cones is recommended. They furnish the additional control which will enable you to provide the precise minimum separation of the discharge air from the ceiling that you need to inhibit smudging and, at the same time, maintain the radial air diffusion pattern you need to eliminate drafts.

What we can do to help

W. B. Connor Engineering Corp. maintains a research laboratory with a staff of trained specialists and district representatives in leading cities. Their services are at the disposal of consulting engineers, architects, air conditioning dealers, and plant engineers. They can assist you in getting the best possible performance out of your air conditioning system by creating custom-made air patterns which thoroughly mix room and supply air, eliminate drafts, and maintain uniform temperature throughout an area.

W. B. CONNOR ENGINEERING CORP.

Air Diffusion • Air Purification • Air Recovery

112 East 32nd Street CONNOR New York 16, N. Y.

IN CANADA: Douglas Engineering Co., Ltd., 190 Murray Street, Montreal 3, P. Q.

FREE HELPFUL LITERATURE

☐ BULLETIN K-22—Contains complete details on the new and exclusive Kno-Draft Anti-Smudge Cone.

☐ NEW HANDBOOK ON AIR DIFFUSION — Contains all the engineering data necessary on air diffusion in general and Kno-Draft Adjustable Diffusers in particular to enable you to create "custom-made" air patterns and eliminate drafts.

W. B. Connor Engineering Corp.
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New York 16, New York

Please send me the free literature I have checked above.

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Company .....

Street .....

City ..... Zone ..... State .....

Michaels STORE FRONTS

Michaels store fronts, push bars, kick plates and thresholds of extruded bronze, aluminum, stainless steel and other metals meet virtually every requirement. Many stock designs are available. However, Michaels is set up to faithfully reproduce in metal the most intricate creations of discriminating architects. Michaels store fronts are unusually attractive and inviting. Specially designed metal letters of harmonizing or contrasting colors add to the effectiveness of these modern store fronts. ¶Architects and builders are invited to consult us on all their requirements for ferrous and nonferrous building products. A partial list of Michaels products is shown below. If this list does not include the product you need, write us. Chances are we have it or can make it. Complete information on any or all products will be sent on request.

MICHAELS PRODUCTS

Bank Screens and Partitions
Welded Bronze Doors
Elevator Doors
Store Fronts
Lettering
Check Desks (standing and wall)
Lamp Standards
Marquises
Tablets and Signs
Name Plates
Astragals (adjustable)
Stair Railings (cast and wrought)
Wrought and Cast Radiator Grilles
Grilles and Wickets
Kick and Push Plates
Push Bars
Cast Thresholds
Extruded Thresholds
MI-CO Parking Meters
Museum Trophy Cases

The MICHAELS ART BRONZE Co., Inc., 234 Scott St., Covington, Ky.

Member of the National Association of Ornamental Nonferrous Metals Manufacturers

★

THE RECORD REPORTS

(*Continued from page 170*)

EXHIBIT OF HOMES

On view in Washington, D. C., through October 10th is a presentation of "Homes of '48 for Better Living," an exhibit of 13 homes in various sections of the city.

The presentation, which opened to the public on September 12th, is being staged by 13 builders and 13 furniture stores under the sponsorship of *The Washington Post*. The purpose of it is to show prospective home owners just what today's houses are like, what furnishings and new conveniences are available, and what the price situation is.

The homes differ widely in type and price, as well as in location. Some are in the District of Columbia, some in the Maryland suburbs, others across the Potomac in the Virginia suburbs.

HOUSING RULES ISSUED

The issuance of new rules and regulations governing the insurance of loans to manufacturers of prefabricated housing and the insurance of loans to purchasers of such houses from the manufacturer under the recent amendments to Section 609 of the National Housing Act has been announced by Federal Housing Commissioner Franklin D. Richards.

The new administrative rules and regulations are available to interested parties upon request to the Washington headquarters of the FHA. Application for insurance of Section 609 loans may be filed by any lender approved as a mortgagee under Sections 203 and 603 of the National Housing Act. All loan applications under Section 609 will be processed at Washington headquarters and all necessary forms may be obtained from that office.

The amendments to the Act, in addition to authorizing the insurance of loans to manufacturers to finance the manufacture of houses, also authorize the Commissioner to insure loans to purchasers of such houses from the manufacturer under purchase contracts providing for the purchase and delivery of the houses to be manufactured.

TUNNEL "HOLED THROUGH"

On September 16th "holing through" ceremonies were held as the north and south portions of New York's Brooklyn-Battery Tunnel were joined.

Ground was broken for the $77,000,000 project in October, 1940. Work was suspended about the end of 1942 because of the war and was resumed in November, 1945. The tunnel is scheduled to be opened to traffic in 1950.

Two separate tubes are being con-

(*Continued on page 174*)

785 PARK AVENUE

Architect: George Fred Pelham, New York
Structural Engineer: Charles Mayer, New York
General Contractor: Frank Morell Construction Co., Inc., New York
Steel Fabricator: Harris Structural Steel Co., New York

This new 19-story plus penthouse apartment structure joins the group of impressive buildings lining the off-the-park section of New York's famed Park Avenue. Known as 785 Park Avenue, the building is equipped with virtually every modern convenience, and has apartment units, varying from three to seven rooms, for 98 families.

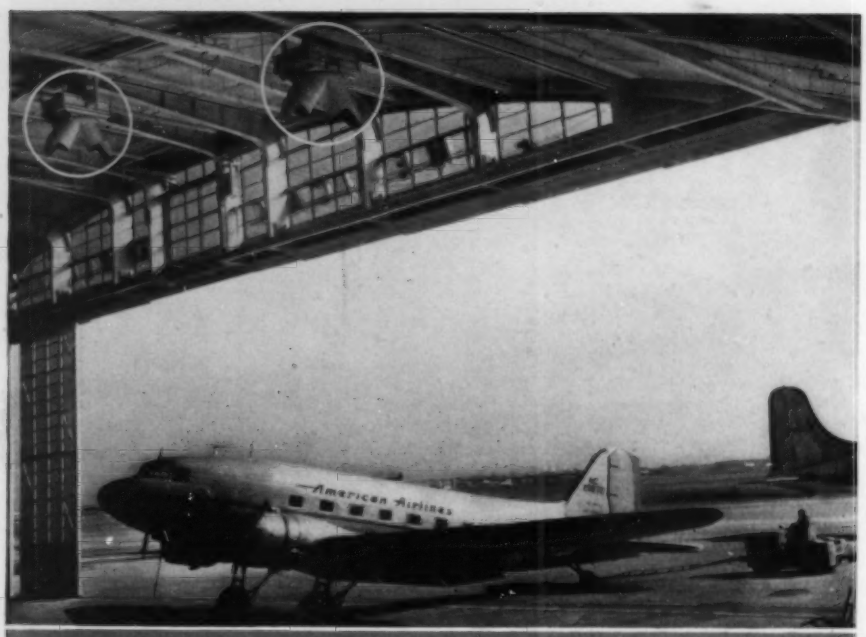
Hidden beneath its attractive, long-wearing cloak of terra cotta block, facing-brick and cast stone is a sturdy framework of Bethlehem Structural Shapes.

BETHLEHEM STEEL COMPANY
Bethlehem, Pa.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Bethlehem
STRUCTURAL SHAPES



Largest Commercial Aviation Hangar in U. S. Heated with Wing Revolving Heaters

AMMANN & WHITNEY, Designing Engineers; CHAUNCEY L. CHASE, Mechanical Engineer; AYMAR EMBURY II, Architectural Consultant.

The Wing Revolving Discharge Outlets turn slowly through a complete circle about once every two minutes, affording complete coverage, avoiding concentrated blasts of air and providing a pleasant, healthful working atmosphere.

The new American Airlines hangar at Chicago, consisting of two units, each 257 feet wide, with door openings 235 feet x 41 feet high, presented a heating problem of unusual proportions.

This problem was solved by the installation of sixteen Wing Revolving Unit Heaters—eight in each building. Because of their unique revolving discharge outlets, they keep the heated air continually moving, circulating around and under the planes and keeping a constantly renewed blanket of warm air clear down to the ground. Only by this means can the heat pass the barrier presented by the huge wings and broad fuselages of giant airliners parked in the hangar. Only by this means can the influx of cold air from the 41-foot doors be counteracted.

Factory owners and managers with heating problems can well be guided by the judgment that solved this immense problem of heating. Write for descriptive bulletin or specific details.

L. J. Wing Mfg. Co. 151 West 14th Street, New York 11, N. Y.

Factories: Newark, N. J. and Montreal, Canada

Wing

Revolving UNIT HEATERS

THE RECORD REPORTS

(*Continued from page 172*)

structed, to carry four express traffic lanes — two in each direction — between the Battery at the lower tip of Manhattan and Brooklyn. The tubes are cast iron lined, 31 ft. in outside diameter. They were shield-driven under compressed air from Brooklyn, and in rock in free air from Manhattan, except for short sections near the Manhattan bulkhead line, which are in earth and rock and required the use of shields and compressed air for construction.

The work of placing the interior concrete lining in the tunnels is now in progress, as is the construction of approaches and ventilation buildings.

The length of the tunnels between portals is 9117 ft. The maximum depth of roadway will be 115 ft. below mean high water. The tunnel will be similar in appearance to the Queens Midtown Tunnel except that the lighting will be by means of continuous fluorescent tubes instead of incandescent lamps.

COMPETITIONS FOR DRAFTSMEN

The Division of Housing, State of New York, has announced two competitions, both limited to architectural draftsmen residing in New York State and students of architectural schools in the state.

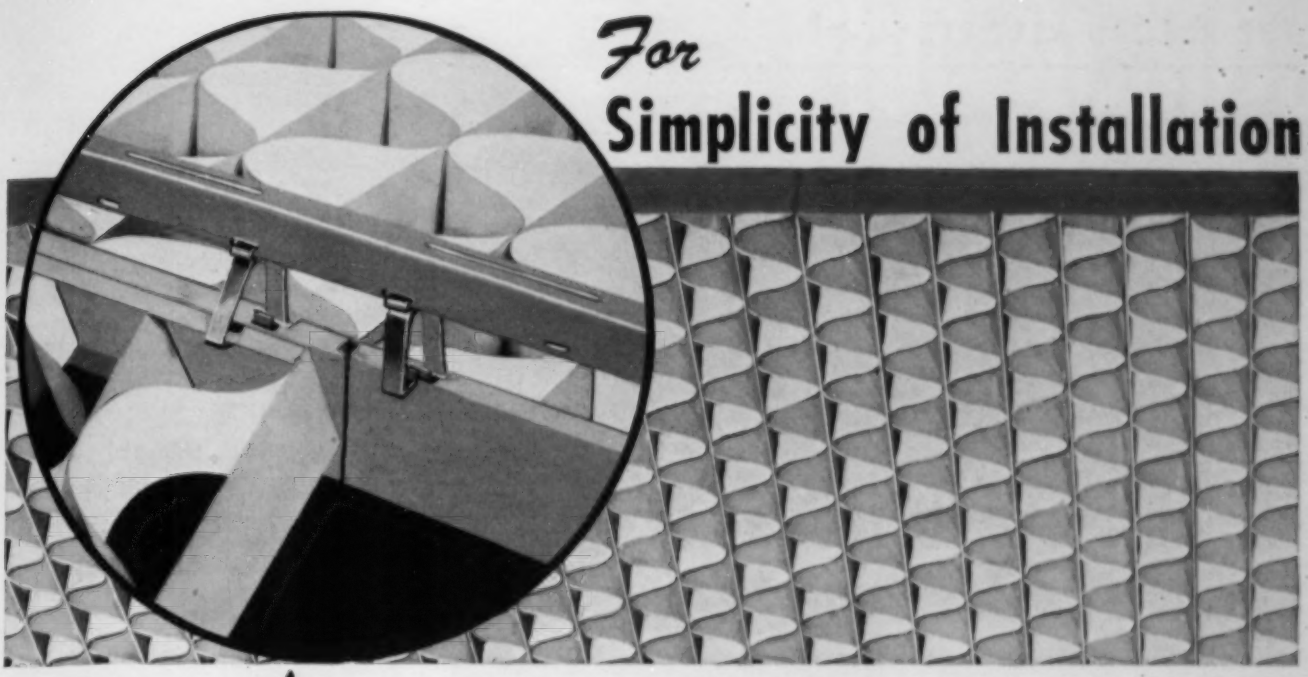
The competitions, approved by the American Institute of Architects' Committee on Competitions, are sponsored by the Institute of Housing and Planning Studies created by the New York State Division of Housing to develop new solutions for housing the average wage earner in the state adequately, comfortably, and economically.

The first of the two, Competition 1-B, is for a home for an average wage earner in New York State. The house is to be designed for an inside, level rectangular lot measuring 60 by 120 ft., and is to contain a living-dining room, kitchen-laundry, two bedrooms and bathroom.

The second competition, 2-B, is for a multi-family development for an average wage earner in New York State. The number and design of the buildings is to be determined by the competitor, but no building shall contain less than four units. The development is to house 80 families, with 15 per cent of the units containing one bedroom, 65 per cent two bedrooms, and 20 per cent three bedrooms.

A first prize of $200, a second of $100 and 10 honorable mentions will be awarded in each of the two competitions. The closing date is November 15, 1948. For complete information address William Lescaze, Professional Adviser, New York State Division of Housing, 270 Broadway, New York 7, N. Y.

(*Continued on page 176*)



For
Simplicity of Installation

Specify FEDERAL Cell-Ceil*

THE COLORFUL DECORATIVE LIGHTING TREATMENT

Specify Federal Cell-Ceil and you simplify installation problems. The light-weight sturdy hanging mechanism developed for Cell-Ceil not only speeds up application but provides such easy access for relamping and cleaning that continued satisfaction to the client is assured.

Federal Cell-Ceil makes overall ceiling louvering practical in remodeling as well as new construction.

Wherever you specify Federal Cell-Ceil you assure those who work and live under this louvered ceiling a soft diffused light. With all direct glare reduced and bad effect of sharp shadows eliminated, uniform lighting is provided that allows better, easier-on-the-eye seeing.

Cell-Ceil comes in harmonious decorator colors. It is made of Acme Galva-Bond Steel** that offers protection against loss of color or corrosion. For the latest information, let us send you our Technical Bulletin on installation techniques.

*Trade Mark "Cell-Ceil" applied for.
**T.R. Acme Steel Co.

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Federal Enterprises, Inc.
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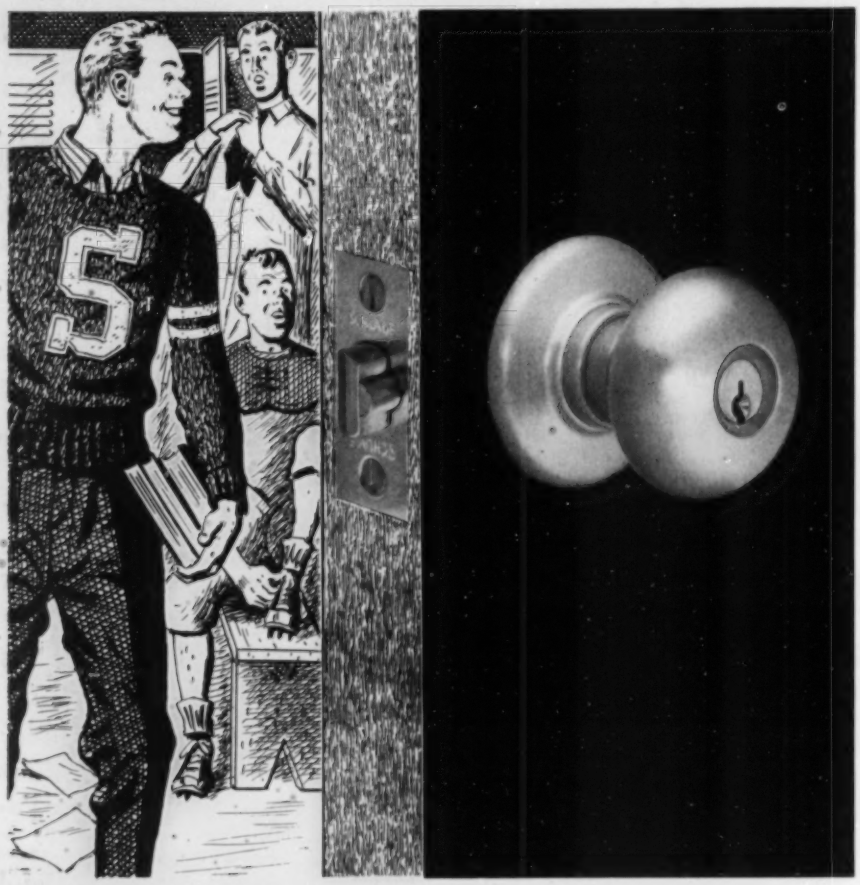
Please send your Cell-Ceil Technical Bulletin on installation techniques.

NAME _____ POSITION _____
FIRM _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

This new home appliance section recently opened in The Hub, Baltimore department store, brought architects Tyler, Ketchum and Myers an award from the Baltimore Association of Commerce for an outstanding alteration which uses an irregularly shaped area advantageously

A Schlage Installation because...



Schlage is Durable

When the Stanfield school board planned their new high school, they didn't realize the importance of good locks. But their architect did. He specified Schlage to stand up under rough usage by thousands of hurried students.

See Schlage in Sweets Architectural File

SCHLAGE LOCK COMPANY
SAN FRANCISCO NEW YORK

"ORIGINATORS OF THE CYLINDRICAL LOCK FOR SCHOOLS"

Chicago medical building is enlarged

BUILDING NOTES

Medical Building Enlarged

The American Medical Association building in Chicago is undergoing another enlargement. Built in 1923, it was originally a 6-story brick structure, but in 1936 it underwent a face-lifting operation from which it emerged with two stories added and new walls of Indiana limestone. In 1941 a 3-story wing was built to accommodate the constantly increasing space needs of the Association, and now the wing is being heightened to provide an additional 35,000 sq. ft., or approximately 25 per cent more, floor space. The addition is expected to cost $500,000. Architects are Holabird & Root & Burgee, who designed the original building and drew the plans for its modernization.

Housing in New York

The greatest sustained construction schedule in the history of New York City public housing will be carried out in the next six months, according to Thomas F. Farrell, chairman of the City Housing Authority. At least 14 housing projects, to provide homes for approximately 15,000 will be started during that period. Three additional projects, to provide 5550 apartments, have been approved and are expected to go into construction early next year; four others, providing more than 2500 apartments, have been submitted to the City Planning Commission and the Board of Estimate for approval.

Most of the projects scheduled are part of the city's new veterans' housing program which consists of limited-subsidy housing to rent at $12.50 a room a month, and housing without cash subsidy to rent at about $16 a room a month. Four of the projects are fully subsidized state-aided projects which will rent at about $8.50 to $9 a room a month.

Store and Business Center

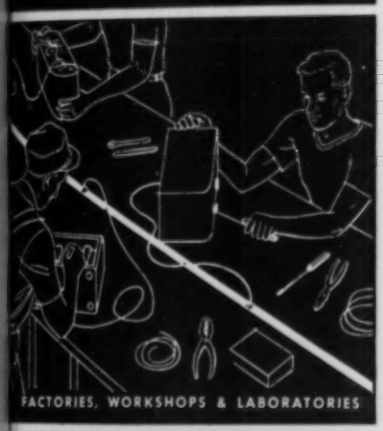
Ground was broken last month for a store and business center to serve the 3800-family Glen Oaks Village apartment development on Long Island, New York. Providing parking facilities for

(*Continued on page 178*)

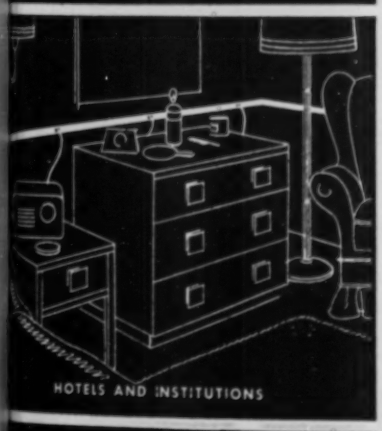
A new revolutionary electrical Plug-in Strip

For Commercial and Residential Uses

OFFICES AND BANKS



FACTORIES, WORKSHOPS & LABORATORIES



HOTELS AND INSTITUTIONS

SODA FOUNTAINS AND SANDWICH SHOPS

AT LAST—

A PROFESSIONAL Multi-Outlet Wiring Assembly that is:

ARCHITECTURALLY CORRECT

EASY TO INSTALL

SAFE AND STRONG

PROFITABLE AT NOMINAL INSTALLED COST

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1. *Solid copper electrical system* from panel box to last outlet . . . Not a screw or a soldered connection in it!
2. *Life-time, fool-proof receptacles . . .* Plug prongs receive full length contact and wipe.
3. *Easy to cut on the job . . .* Short lengths are cut to fit in a manner similar to conduit.
4. *Tamper-proof . . .* Capping is permanently locked on. There's no reason to ever open up Plug-In Strip.

Listed by Underwriters' Laboratories.

MAIL the coupon today for complete information on this revolutionary *professional* wiring assembly.

NATIONAL ELECTRIC PRODUCTS — WIRING SYSTEMS

National Electric Products Corporation
1310 Chamber of Commerce Building
Pittsburgh 19, Pa.

☐ Please send me your catalog on the NEW PLUG-IN STRIP.

☐ Also installation information.

NAME_____

ADDRESS_____

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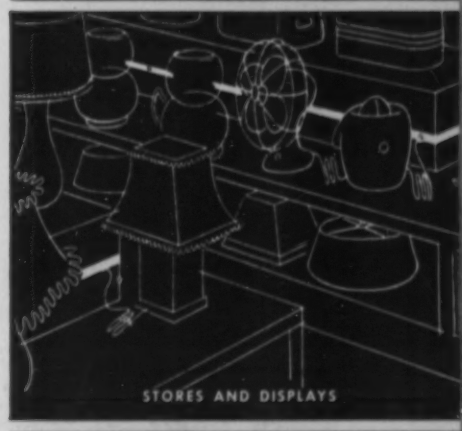
RESIDENCES AND CLUBS



STORES AND DISPLAYS

KITCHENS

RESTAURANTS, LOBBIES & LOUNGES

Construction is now under way for this community center designed by Leo V. Berger

600 cars, the center is expected to attract also the approximately 50,000 residents of the area surrounding the development.

Designed by Leo V. Berger, Architect, for Gross-Morton Company, builders, the shopping center will be fully air conditioned. It will consist of three building groups with a total of 121,000 sq. ft. of street floor area plus an additional 20,000 sq. ft. of second floor office space. Included will be a major department store branch, a motion picture theater, chain stores and specialty shops, a library, post office, and bank.

Maximum pedestrian safety and comfort are assured shoppers by a continuous sidewalk extending for more than half a mile around the entire store area and unbroken by a single street crossing. Walks will lead directly from the stores to the parking area in the rear. The parking area will provide a gasoline and service station with complete facilities for the servicing of cars while their owners are shopping. Running through the center from front to rear will be a broad, tree-lined arcade, lined with shops.

Adaptable

TO ANY INTERIOR DESIGN

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Plain, Horizontaline, and Tile Patterns in a variety of sparkling colors, and in high gloss or velvet smooth finish. Wood and Marble Patterns in a variety of beautiful, authentic reproductions.

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Width, 4 feet. Lengths, 4 to 12 feet. Thickness, 5/32 in. Complete line of aluminum alloy, presdwood, and plastic mouldings for all requirements.

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Heating plant to serve federal buildings

Steam Plant

Nearing completion in Washington, D. C., is the West Central Heating Plant, built by the Public Buildings Administration of the Federal Works Agency to serve public buildings in the city. The new plant, located at 29th and K Streets, N. W., will supplement the heavy heating load which has been carried by the Federal Central Heating Plant built in 1934.

Work on the new plant was started in February, 1942, but was suspended in April of that year because of the war, and not resumed until February, 1946. The building is of steel construction with brick exterior curtain walls, and is five stories in height.

Carnegie Hall Spruced Up

Fifty-seven-year-old Carnegie Hall in New York City has been rejuvenated. During the summer months its exterior

(*Continued on page 180*)

Construction idea for plants and warehouses

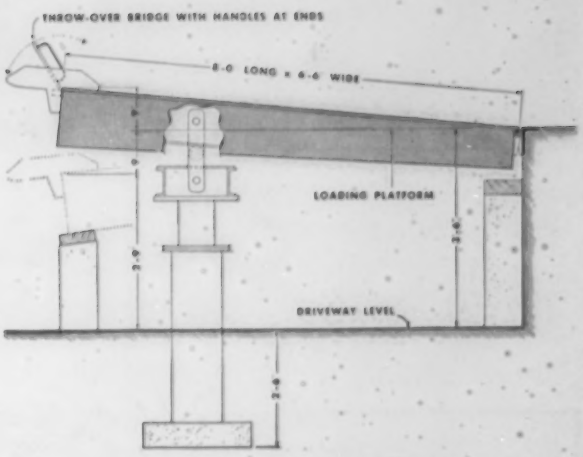
LEVA·DOCK*

ADJUSTABLE RAMP
FOR LOADING DOCKS

The Leva-Dock moves up and down with varying truck bed levels—permits loading directly into trucks or trailers

Loading and unloading trucks and trailers presents a tough loading dock problem because (1) truck bed heights vary as much as 12 inches, and (2) the truck bed moves down or up as loading and unloading progresses. This problem has been made very serious by the use of power vehicles handling heavy loads.

The Leva-Dock makes it possible to load directly into or unload from all types of trucks or trailers . . . without using steel plates, bridge ramps, or other slow and frequently dangerous methods. It is being used by leaders in industry, and has been approved by architects and engineers as one of the most practical pieces of building equipment developed in recent years. Installation is simple and inexpensive.



How the Leva-Dock Operates

The Leva-Dock is a hinged platform with hydraulic jack. With front end of the Leva-Dock platform raised, the truck or trailer is backed into position for unloading or loading. Then the Leva-Dock platform is lowered until the heavy supporting arms rest on the truck or trailer floor. The gap between the Leva-Dock and the vehicle is bridged by a steel "throw-over" bridge. The hydraulic system is then released so that the front end of the platform is free to travel up or down with the truck bed as truck springs are relieved or compressed during loading and unloading.

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LEVA·DOCK*

was steam-cleaned and its staid interior treated to a new and almost startling color scheme. Walls and ceiling of the hall have been painted a rich mulberry; horizontal trim is off-white, and the interiors of the first and second tier boxes are a rich blue. The several white railings along the upper side walls were repainted mulberry, to blend into the walls and be less conspicuous.

Much of the ceiling lighting has been replaced by spotlights around the center dome, with the wheel chandelier at the entrance to the main floor Gallery Bar and Restaurant replaced by modern, flush lighting fixtures.

The stage has been repainted a neutral gray and new, more graceful contours have been achieved through treatment of the rear side walls and ceiling and the hanging of new side drapes designed especially to meet acoustical requirements as expressed by several orchestral conductors. A new lounge and refreshment bar has been installed for Dress Circle patrons, and new locker and dressing rooms for the ushers have been provided in the Dress Circle.

PLAN FOR MANHATTAN

A program for the redevelopment of the East midtown area of New York City has been submitted by the Civil Design Committee of the New York Chapter, A.I.A., to the City Planning Commission. The development is in relation to the expansion of the retail shopping belt as well as to the United Nations headquarters.

The proposal is a program which includes many projects already recommended by various public organizations for development of the area over a period of five to twenty years. The program calls for:

1. Adoption by the Planning Commission of a Land Use master plan for the entire area from the Queensboro Bridge to the Midtown Tunnel approach, and from Lexington Avenue to the East River.

2. Early enactment of the remaining zoning changes, already studied and proposed by the Borough President, necessary to guide the development of this whole area and to prevent undesirable speculation and construction that would conflict with the city's plans.

3. Widening of Second Avenue as an express thoroughfare, with central parked strip and several underpasses, at the same time that the Second Avenue subway is built.

4. Eventual extension of the proposed First Avenue truck traffic tunnel from 41st Street to a point north of the Queensboro Bridge, instead of coming to the surface at 47th Street as now proposed, in order to give Beekman and Sutton Place residents the same protection afforded the United Nations.

5. Removal of the Third Avenue Elevated, relieving traffic on Lexington Avenue, which could then allow parking to aid retail shops.

6. Creation of several residential neighborhoods by the closing of occasional cross streets to through traffic, providing local parks, shopping centers, schools and playgrounds.

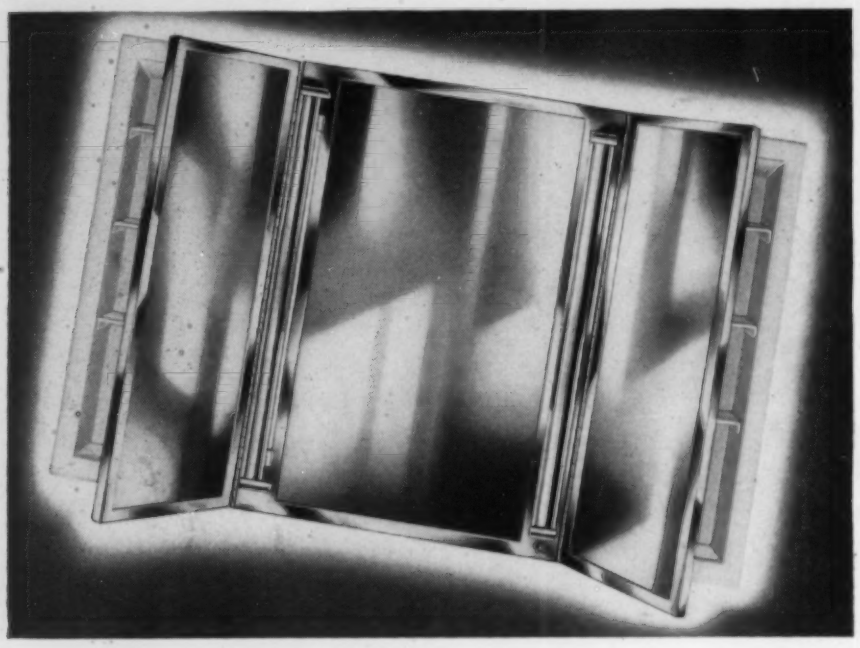
7. A new station of the IRT-Astoria line at First Avenue and 42nd Street.

8. A new station of the Long Island Railroad at or near 34th Street and Second Avenue.

9. A new airlines terminal at or near the Midtown Tunnel Approach, 37th Street and Second Avenue.

10. Creation, by private investment funds, aided by public condemnation powers, of a new East-West artery linking the Grand Central and United Nations zones, midway between 46th and

(*Continued on page 182*)



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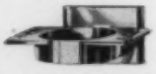
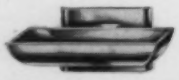
Above: No. 7004 Lumiline or Fluorescent Light Cabinet with Side Cabinets.



No. 215 Tumbler and Tooth Brush Holder



No. 210 Soap Holder

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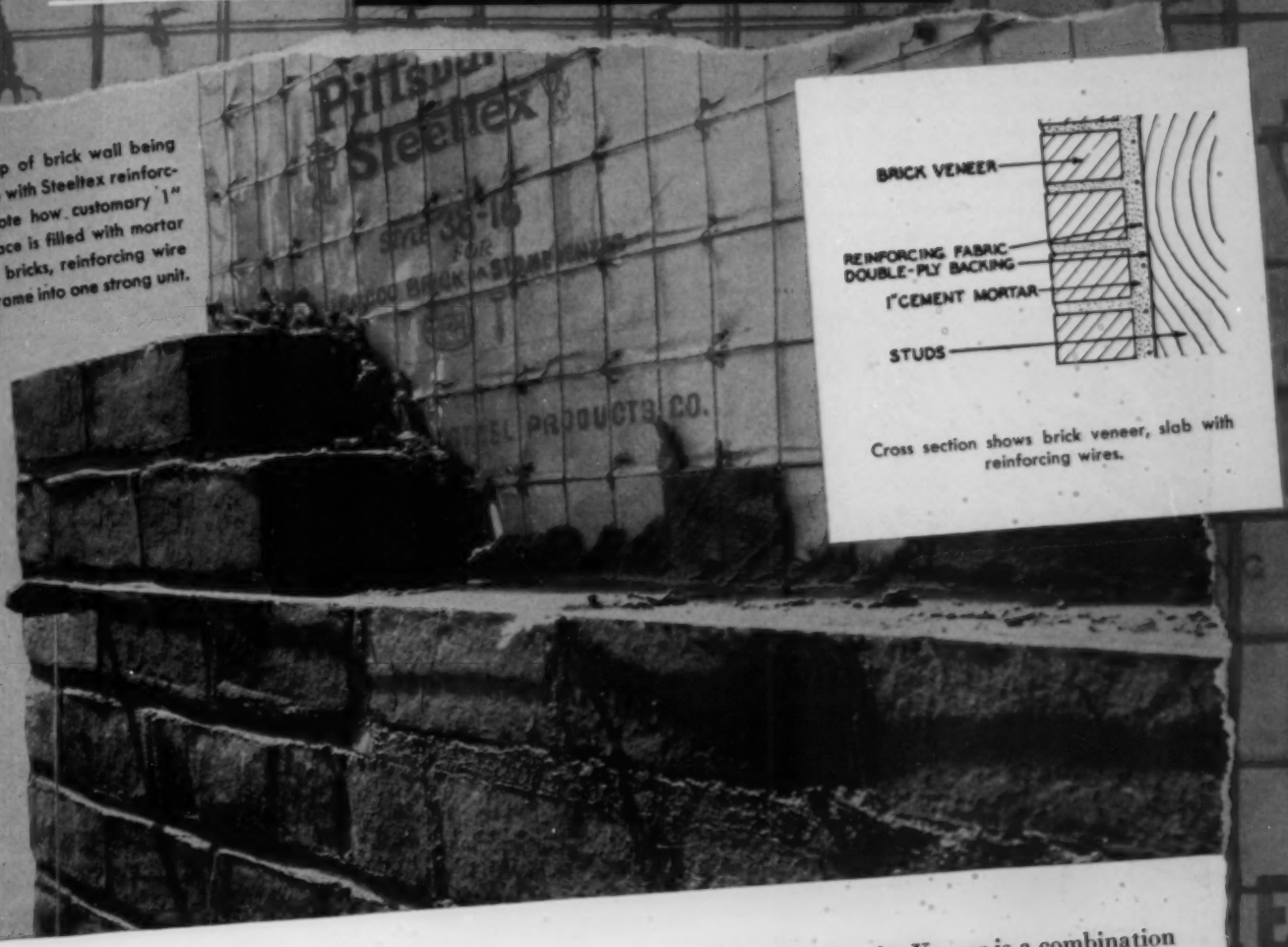

Close-up of brick wall being laid-up with Steeltex reinforcing. Note how customary 1" air space is filled with mortar to tie bricks, reinforcing wire and frame into one strong unit.

Cross section shows brick veneer, slab with reinforcing wires.

Pittsburgh Steeltex for Veneer provides sheathing and building paper all in one. But better than that it gives you strong walls of reinforced brick or stone construction with economy. Steeltex will make you proud of the permanent house you have built—make the owner sing your praises as an architect or builder.

Construction with Steeltex provides many advantages—a monolithic concrete slab completely around the structure—positive protection from moisture penetration—greater fire protection through elimination of dead air space and resulting flue action—all mortar joints completely filled—reduces upkeep. In addition it is easy to apply, requires no special tools or methods and takes the place of sheathing and building papers. Many architects and contractors have found it makes for better construction—they specify it on all their jobs.

Pittsburgh Steeltex for Veneer is a combination of cold drawn, galvanized steel wire, welded into two-inch square mesh, laced to a double-ply waterproof backing that is sealed with mastic. The absorbent face of the backing provides a suction bond with the mortar. The mesh provides reinforcing for the mortar which is slushed in behind the veneer. When dry, the wall is a strong unit of brick or stone and reinforced concrete slab, attached firmly to the frame as an integral part of the structure.

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This background photo shows Steeltex—one-third actual size.

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PITTSBURGH STEEL PRODUCTS

47th Streets, overpassing both First and Second Avenues.

11. Encouragement of the development of the superblocks thus created, from 45th to 48th Street, with hotels, theaters, concert and convention halls, as well as office buildings for press, publishing and other activities related to United Nations affairs.

12. Extensive public parking facilities, many of them underground, at the Midtown Tunnel and Queensboro Bridge approaches, as well as in connection with the proposed new East-West artery.

The program is being exhibited at the Architectural League Building, 115 E. 40th St., New York.

AT THE COLLEGES

Scholarship Awarded

Announcement has been made by the School of Architecture and Allied Arts, University of Oregon, that the Ion Lewis Traveling Scholarship in architecture has been awarded to Joseph H. Young, a recent graduate of the Oregon school. The award was made on the basis of Mr. Young's project on "The Tradition of Wood in America and its Expression in Contemporary Domestic Architecture."

Mr. Young plans to visit several states and cities where significant historical and contemporary domestic architecture in wood is located and will gather together a series of sketches, photographs and slides which he will supplement with a written report to complete his study in the appreciation and capabilities plus the limitations of wood as a building material.

New Booklet

The Small Homes Council of the University of Illinois has issued a new circular, the 20th in its series on home planning and construction, telling prospective home builders what they should know about business dealings with architects and contractors.

Called "Business Dealings with the Architect and the Contractor," the leaflet gives six rules for trouble-free building. Single copies may be obtained free of charge from the Small Homes Council, University of Illinois, Urbana, Ill.

Instructors Needed

Additional instructors in architectural design, structural design and related courses are needed at the schools of architecture for the fall semester. Anyone interested in a career in the teaching profession should apply to Professor Paul Weigel, Chairman, Committee on Employment for the Association of Collegiate Schools of Architecture, Kansas State College, Manhattan, Kansas.

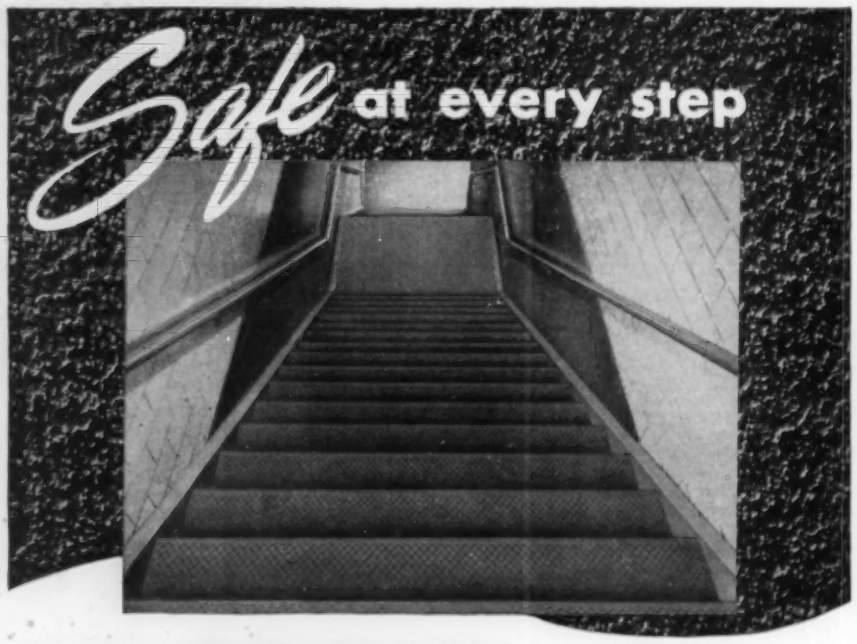
Appointments

The College of Architecture and Design, University of Michigan, has announced the appointment of C. Theodore Larson as Professor of Architecture, and of Willard A. Oberdick and Edward V. Olencki as instructors in architecture.

The appointment of Thurmel McMahon, assistant at the Columbia University School of Engineering, as Assistant Professor of Civil Engineering at the University of Kansas has been announced. Mr. McMahon, a graduate of Kansas State College and Columbia's School of Engineering, will teach soil mechanics.

John W. Wood, of Locust Valley, Long Island, N. Y., one of the nation's leading designers of airports, has been named an Associate Professor of Architecture in the College of Fine and Applied Arts at the University of Illinois. The author of numerous books and articles, Mr. Wood was chief of the Airport Layout and Safety Unit, Engineering and De-

(*Continued on page 184*)



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Their shoe soles come to grips with non-slip Feralun Safety Stair Treads, cast iron, with wear-resistant abrasive embedded right in the walking surface.

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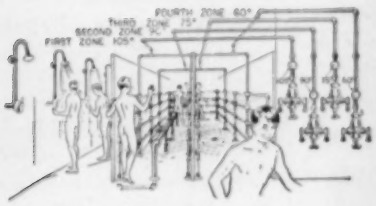
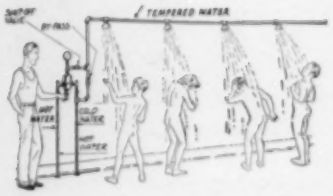
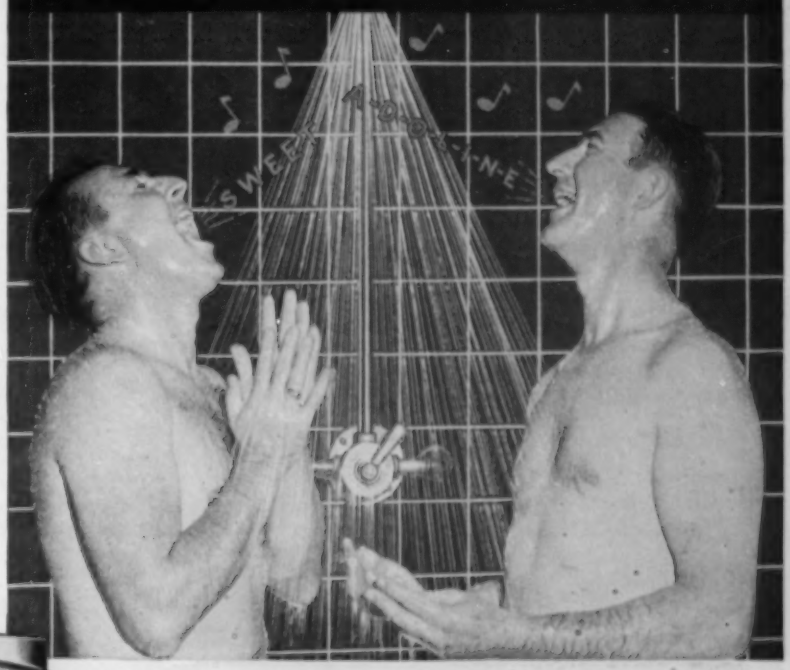
OTHER TYPES OF POWERS SHOWER CONTROLS





SWELL DAY...SWELL GAME...

...and Now for a Swell Shower!



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velopment Branch, Headquarters, Army Air Forces, during the war. He was co-designer of the Army Air Force Technical Schools, Lowry Field, Denver, Colo., and from 1937 to 1942 was a partner in the firm of Poor and Wood, Airport Consultants.

ELECTIONS, APPOINTMENTS

Robert E. Alexander, Architect, has been re-elected president of the Los Angeles Planning Commission.

Peter Blake, Designer, has been appointed Curator of the Department of Architecture of the Museum of Modern Art, New York City, to succeed Mary Cooke Barnes.

OFFICE NOTES

Offices Opened, Reopened

Gilbert Associates, Inc., Engineers and Consultants, have opened a new office in the Oil and Gas Bldg., Houston 2, Texas. Aaron P. Campbell, vice president, is in charge. The company also maintains offices in New York, Philadelphia, Washington, Reading (Pa.), and Manila.

Frederic A. Long has announced the opening of offices for the practice of architecture at 500 Columbia Bldg., Spokane, Wash.

New Addresses

The following new addresses have been announced:

David Searcy Barrow, Architect, 333 Park Ave., Glencoe, Ill.

Barnet Glickler, A.I.A., Suite 507, 1601 Chestnut St., Philadelphia 3, Pa.

Allen White Hall, Architect, 1201 H St., Manasquan, N. J.

Samuel Arthur Lichtmann, A.I.A., 1 N. LaSalle St., Chicago 2, Ill.

Harry Maurer, Architect, 323 Carsonia Ave., Reading, Pa.

Moses Mendelson, Architect, 2005 Ocean Ave., Brooklyn 30, N. Y.

Isadore Rosenfield, Architect and Hospital Consultant, 23 W. 47th St., New York 19, N. Y.

Tibbals-Crumley-Musson, Architects-Engineers (Todd Tibbals, Geo. D. Crumley, Noverre Musson, Carl E. Bentz, Paul J. Ford), 965 E. Broad St., Columbus 5, Ohio.

New Firms, Firm Changes

Ernest A. Grunsfeld, Jr., F.A.I.A., Samuel Arthur Lichtmann, A.I.A., and William F. Koenig have announced the dissolution of their partnership for the practice of architecture as of July 1, 1948.

Albert F. Heino & Associates (Albert F. Heino, A.I.A., and D. Carr Whitehead, A.I.A.) have announced the opening of offices at 7919 S. Ashland Ave., Chicago, Ill., for the practice of architecture and industrial design.

Chester N. Lowe, Architect, and Samuel K. Popkins, A.I.A., Architect and Engineer, are now associated for the general practice of architecture, with offices at 8931 Carnegie Ave., Cleveland 6, Ohio.

William G. Lyles, A.I.A., T. J. Bissett, A.I.A., William A. Carlisle, A.I.A., and Louis M. Wolff, A.I.A., who have practiced heretofore under the name of Stork & Lyles, Architects, Bissett, Carlisle & Wolff, Associates, have announced that the name of their firm has been changed to William G. Lyles, Bissett, Carlisle & Wolff, Architects. Offices will continue to be at 1302 Main St., Columbia, S. C.

Francis Dodd McHugh, Registered Architect, and Theodore T. McCrosky, Licensed Professional Engineer, have established a consulting service to private and public agencies for community and regional development problems under the firm name of McHugh & McCrosky. Address, 23 E. 26th St., New York 10, N. Y.

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Architects Specify Alumitile the modern Luxury without adding prohibitive costs.
For any type of installation, residential, commercial or industrial, an unlimited number of designs can be achieved with the following wide range of tile sizes:
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5 x 10 5 x 10 Base
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Because of its many advantages every property owner wants tile. NOW you can see that they get it in a price range that is as attractive as the tile itself.
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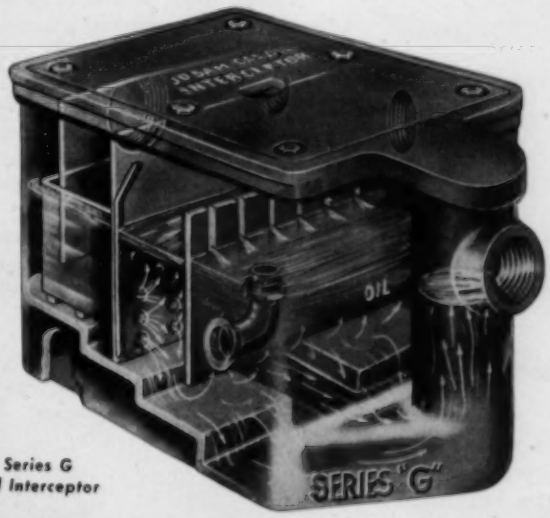

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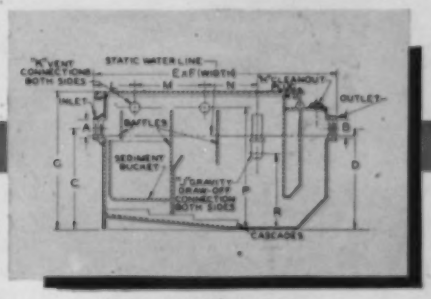

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 (*Continued from page 10*)

assist non-priority residential builders until such time as they are able to obtain the nails they require through regular channels. Proof of his inability to secure nails from the usual sources must accompany each builder's application for an emergency supply.

Farm Completions Lag

The latest issue of "Housing Progress Abroad," a quarterly publication of Central Mortgage and Housing Corporation, deals with rural shelter. It reveals that Canada shares with other countries a farm housing problem characterized by overcrowding, poor state of repairs, low standard of amenities, and lack of such facilities as electricity, plumbing and heating.

While 26 per cent of Canada's population is agricultural, only 769 new farm dwelling units were completed in the first five months of 1948. This represents only 3 per cent of all completions in cities, towns and rural areas during the period.

N.H.A. Loans Soaring

Central Mortgage and Housing Corporation announces that loans approved under the National Housing Act for the first six months of this year are upwards of twice as great as those approved during the same period last year.

The score to July 1, 1948, is 8908 new dwelling units with loans valued at $45,974,440 compared with 5530 units with loans valued at $26,586,000 for the corresponding period in 1947.

Farm Houses Designed

The provincial governments of Manitoba, Saskatchewan and Alberta jointly sponsor, with the federal government's Central Mortgage and Housing Corporation, a Prairie Rural Housing Committee. A booklet of farm house designs, prepared under the auspices of the Committee, was recently published by the Planning Research Centre of the School of Architecture, University of Manitoba.

Titled *Farm Houses*, this excellent booklet defines planning principles, then illustrates their application in a series of 10 basic designs. The designs have been developed to give "a reasonably wide choice in size and variation of arrangement" as well as to suggest "both workable and livable farm houses for the prairie region."

Blueprints of the working drawings for each house are offered for a nominal sum by the provincial departments of agriculture and C.M.H.C.

Students display competitive range models

Students Design Ranges

Third-year students in the School of Architecture, University of Toronto, recently participated in a competition sponsored by Moffats Limited. The firm, one of the largest Canadian manufacturers of kitchen equipment, sought suggestions as to how its standard gas range might be revamped for greater efficiency and better appearance. Model ranges shown above indicate, at neophyte level, architects' affinity for industrial design.

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FOR REPLACEMENT OF ORDINARY SOIL PIPE:
Ordinary iron soil pipe after three years in a college laboratory. Since it was concealed in the ceiling, replacement was extremely costly. The Duriron pipe which replaced it has caused no expense since its installation sixteen years ago.

The corrosion that consumed this ordinary iron pipe took a bite into the building owner's pocketbook. Probably that replacement bill took more than a nibble at his confidence in some architect's judgment.

Stop that replacement cost *now*. Specify Acid Proof Duriron for Chemical Laboratory drain lines . . . and for any other corrosive handling waste system. Duriron simply ignores corrosives. Consult Sweets. Or get complete information by writing for Bulletin 703...today.

THE DURIRON CO., INC. • DAYTON 1, OHIO

Branch Offices in Principal Cities

DURCO Adv. 63-GM

DURIRON ACID PROOF DRAIN PIPE

"AND REMEMBER, THESE FELTS ARE FIREPROOF, ROTPROOF, WEATHERPROOF"

Yes-it's Flexstone*

Each ply is a flexible covering of stone!

• The secret of a Johns-Manville Flexstone Roof is in the *felts*. They're made of fireproof, rotproof, enduring *asbestos*.

Flexstone Built-Up Roofs won't dry out from the sun . . . need no periodic coating. They're *smooth-surfaced*, too—permit thorough drainage . . . make any damage easy to locate and repair. They are engineered to each job . . . applied only by J-M Approved Roofers.

J-M asbestos felts are perforated to make application easier . . . give you a smoother job and conform better to irregularities in the roof deck.

Send for Flexstone brochure BU-51A. Contains complete specifications. Address: Johns-Manville, Box 290, New York 16, N.Y.

*Reg. U. S. Pat. Off.

Johns-Manville *FLEXSTONE* Built-Up Roofs

(*Continued from page 153*)

layers, reinforced by bronze or brass dowels and screws. Where the restoration is deep, the cavities are filled in with lumps of stone embedded in the Deckosit paste.

The adhesive quality of the paste plus the special method of cutting out the stone is said to insure that restored parts become an integral part of the stonework. The surface of Deckosit stone is worked and carved in the same manner as quarried stone. No coloring matter is necessary, according to the manufacturer. The Deckosit Co., Inc., 350 5th Ave., New York 1, N. Y.

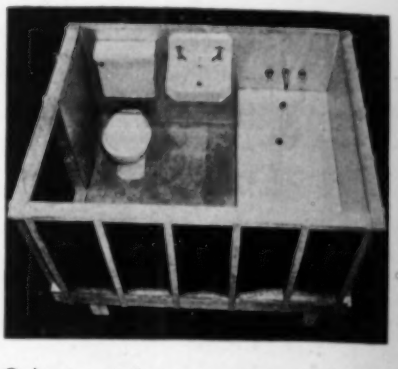
PREFABRICATED BATHROOM

Of interest to large-scale builders should be the prefabricated bathroom unit, *Unitility*, now being built in Canada, which has been designed to provide a low cost, integrated plumbing unit suitable for installation in any type of home.

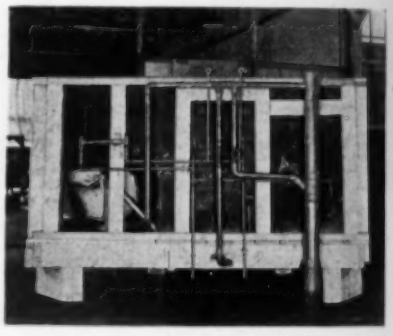
The units measure 5 by 6½ ft. in either right- or left-hand models. The base has a 2 by 6 in. wood joist floor, covered with 1 by 6 in. subfloor and 3/16 in. plywood finish floor.

Walls are constructed of 2 by 4 in. studs, sill and plate covered with 18 gage, steel sheet wallboard. An opening is provided in the wall for installation on the job of a wood door frame.

All steel is primed with one coat of lacquer inside the bathroom and is covered with a heavy coat of special insulating, sound-deadening mastic on the outside.



Only connections necessary to this integral, prefabricated bathroom unit are the hot and cold water, waste and vent



Fixtures and accessories include a 5 ft. bathtub, porcelain enameled lavatory, white vitreous china water closet and fittings, and seat and cover.

Copper pipe is used and the only connections necessary in the field consist of hot and cold water, waste and vent. A shower fixture can be provided at extra cost. St. Catharines Steel Products Ltd., P.O. Box 297, St. Catharines, Ont.

FIRE EXTINGUISHER

A home fire extinguisher has been designed to have the appearance of door chimes, providing two conveniently stored cylinders which are charged with carbon dioxide. The white enameled cylinders are 31 in. long by 1¾ in. wide being held by a decorative hanger box. The carbon dioxide is released by turning a handwheel, and after use the cylinders may be easily recharged. Titan Distributing Co., Inc., P. O. Box 156, Buffalo 5, N. Y.

(*Continued on page 192*)

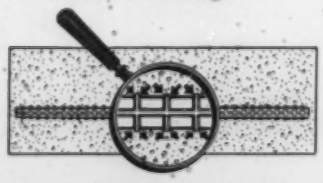
The Second of a Series in the interest of more efficient use of steel...a vital American resource.

DISTRIBUTED STRENGTH

LACLEDE

Balanced strength and design REINFORCING BARS

Old type reinforcing bars depend on localized anchorage.



Multi-Rib improved bars distribute anchorage and loads.

While outmoded building codes may require hooks on reinforcing bars because of the need for anchorage and bond,—for the first time in 30 years—newly developed ASTM specifications A305-47T for deformations, now assures definite anchorage with the attendant opportunity for more efficient use of steel by eliminating hooks and shortening length of embedment.

Laclede Multi-Ribbed Bars meet these specifications and are rolled to give the construction industry every advantage of steel through *balanced design* and *strength*. High yield point (in excess of 55,000 PSI) combined with maximum anchorage conserves steel tonnage for America as well as for the contractor.

Laclede Multi-Rib Reinforcing bars give strength, anchorage and balance to reinforced concrete design.

Write us about specifying Laclede Multi-Rib bars on your jobs.

LACLEDE
Producers of Construction Steel

LACLEDE STEEL COMPANY
St. Louis, Mo.

Use Both . .

SISALATION and SISALKRAFT

for insulated DRY WALL *construction at new low cost!*

VAPOR SEALED FROM THE Inside
SISALATION provides BOTH insulation and vapor-barrier . . . helps prevent passage of harmful moisture-vapor through sidewalls from inside the house.
SISALATION
REFLECTIVE INSULATION
SHEATHING
SISALKRAFT
SIDING OR BRICK VENEER
WEATHER SEALED FROM THE Outside
Rugged, waterproof SISALKRAFT over exterior sheathing prevents passage of wind-driven rain into walls from the outside.

This new insulated DRY WALL *construction meets FHA Vapor-Barrier Requirements (Class A, Federal Specifications UU-P-147)*

This new insulated DRY WALL construction (SISALATION plus SISALKRAFT) combines insulation and vapor-barrier advantages at very low cost . . . helps stop passage of harmful moisture into walls! SISALATION, bowed in between studs, provides TWO insulating air spaces, and its reflective surface helps keep homes warmer in winter, cooler in summer. Heavily reinforced by cross-laid sisal fibres, tough and strong, SISALATION and SISALKRAFT remain in place, permanently and effectively, for the life of the building. Here is quality construction with true economy!

Modern
DRY WALL CONSTRUCTION

Write today for further information and samples of these two products.

The SISALKRAFT Co.
Chicago 6 • New York 17 • San Francisco 5

The SISALKRAFT Co., Dept. AR, 205 W. Wacker Drive, Chicago 6, Ill.
Please send more information, samples and where I can buy SISALATION and SISALKRAFT. I am an ☐ Architect ☐ Contractor
☐ Other.....
Name.....
Address.....
City & Zone..... State.....

(Continued from page 190)

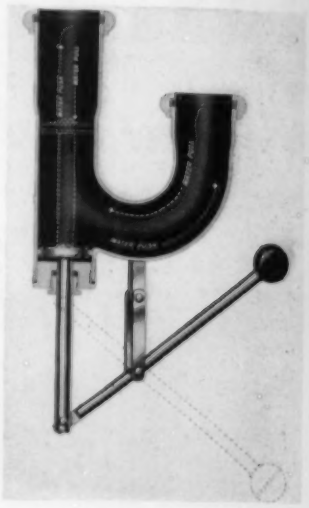
DRAIN CLEANER ASSEMBLY

To make the drain assembly self-cleaning, the Telmor Products Corp. is marketing a hydraulic device that is built into a conventional sink trap, replacing the existing trap and becoming a permanent part of the sink drainage system.

Designed to conform with plumbing codes, the *Drainmaster* works by activation of a lever which causes a piston within the device to set up a two-way motion of the water within the system. This motion is claimed to break up, dislodge or flush out any obstructions in the line.

The body of the Drainmaster is of 17-gage brass, polished chrome plated. The piston head is of a specially developed neoprene-type material, impregnated to resist grease, acids and alkaloids. The packing is made of a lead-layered ring with double core of graphite.

The piston head and packing are adjustable to compensate for wear and are said to be easily replaceable without special tools. Telmor Products Corp., 1910 W. Lake St., Chicago, Ill.



Assembly lever opens clogged drains

HEAT PUMP

The latest development in commercial heat pumps by the Muncie Gear Works is a *Marvair* unit which operates on either natural, manufactured or L. P. gas, with operation on the latter making flexible installation possible.

Since the heat pump can take heat from the earth in winter and put heat into the earth in the summer, the gas-operated Marvair unit is reported to have an operating efficiency of about 200 per cent in the laboratory and is warranted by the manufacturer at 180 per cent.

The manufacturer claims that operation is clean, quiet and that it has the safety of a conventional gas furnace.

The gas manufacturer is said to benefit from this type of installation since it provides a high load factor. Muncie Gear Works, Inc., Marvair Div., Muncie, Ind.

ELECTRONIC TEMPERATURE CONTROL

A new automatic temperature control for homes and small buildings has been designed which anticipates changing heating loads due to changes in outdoor temperature.

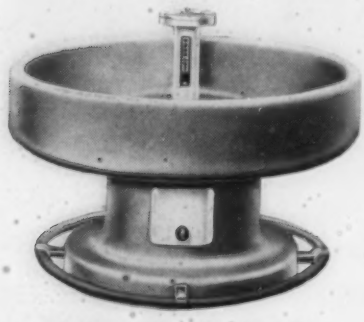
The *Johnson Three-Point Controller* has been engineered for use with all hot water and warm air heating systems; continuously measured are outdoor, indoor and heating system temperatures (temperature of hot water or hot air actually in pipes or air ducts). All three temperature measuring elements are connected to a simple electronic amplifier which translates the tempera-

(Continued on page 194)

SAFEGUARD EMPLOYEES' HEALTH WITH SANITARY WASH-FIXTURES

Described as the "closest thing to a germproof building" the new Laboratory at _____ has every sanitary safeguard such as:

"The sinks have no handles to be contaminated by busy hands; faucets are operated by . . . foot pedals".



The 54" Bradley Washfountain

Bradley's Have No Faucets to Touch

Bradley Washfountains, used for more than a quarter century, provide faucetless foot-operated wash fixtures. Not only does this eliminate maintenance but means that employees need touch nothing but the cleansing spray of *running* water that comes from the central sprayhead. One 54-inch Bradley serves 8 to 10 workers simultaneously.

And, in the new Bradley DUO you now have available for smaller washrooms—the same sanitary features—foot-control, running water for two persons, self-flushing bowl that prevents collection of contaminating water in the bowl.

For further details on Bradley Washfountains write for Catalog 4701. BRADLEY WASHFOUNTAIN CO., 2227 W. Michigan St., Milwaukee 1, Wisconsin.

Distributed Through Plumbing Wholesalers

BRADLEY washfountains

For Schools . . . Little Flower School, San Antonio, Tex. *Architects:* Julian & White, San Antonio. *Contractor:* Lynn & Morsey, San Antonio. 221 Fencraft Windows.

How Fencraft gave these Architects *finer windows at Lower Cost*

Fencraft* Windows are designed to provide the quality you want in buildings of character . . . and to help you solve today's problem of costs.

Standardization makes it possible to achieve this double goal. For standardization of types and sizes permits manufacturing efficiency. That means lower unit cost. It results in lower installation costs, too—for Fencraft Window dimensions are co-ordinated with those of collateral wall materials.

These are the finest windows we have ever built. We've applied our long experience in designing top-quality casement sections, and used the finest materials and workmanship, to produce, in Fencraft, windows in keeping with the finest buildings.

Here's beauty—plus durability. Utility, too—in easy screening, safer washing, firesafety, better daylighting and controlled ventilation. These are good reasons why architects are specifying Fencraft Casement, Projected and Combination Windows for all types of buildings. For full information on types and sizes, see Sweet's Architectural File for 1948 (Section 16a-14) or mail the coupon.

For All Types of Buildings

Made by America's Oldest and Largest Steel Window Manufacturer

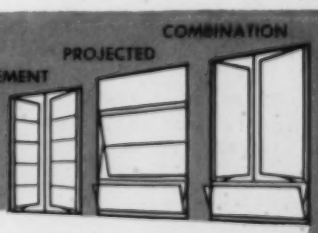
For Hospitals . . . Annie M. Warner Hospital, Gettysburg, Pa. *Architect:* John B. Hamme, York, Pa. *Contractor:* Earl L. Gump, Chambersburg, Pa. 86 Fencraft Windows.

For Office Buildings . . . Research & Development Building, Sinclair Refining Company, Harvey, Ill. *Engineers & Contractor:* The Austin Company. 428 Fencraft Windows.

For Industrial Buildings . . . L. C. Smith & Corona, Syracuse, N. Y. *Architect:* Carl W. Clark, Cortland, N. Y. *Contractor:* J. D. Taylor Construction Corporation, Syracuse. 1214 Fencraft Windows.

*Trademark

Fenestra



FENCRAFT INTERMEDIATE STEEL WINDOWS

Detroit Steel Products Company,
Dept. AR-10,
2252 East Grand Blvd.,
Detroit 11, Michigan

Please send me data on types and sizes of the new Fencraft family of Fenestra Windows.

Name_____

Company_____

Address_____

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 192*)

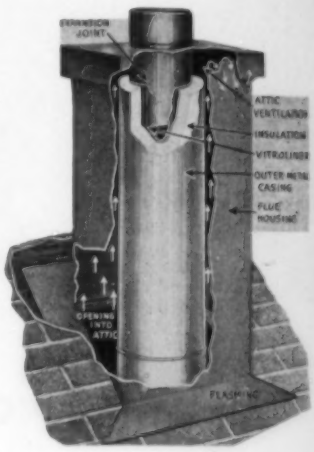
ture measurements into controlling action whenever a temperature change occurs at any one of the three control points.

With ordinary on-off thermostats the heating plant is normally operated at full capacity regardless of weather conditions. The new control is said to insure automatically that the full capacity of the heating plant is used only when the weather is most severe. The heating effect is reduced, in proper proportion, as outdoor conditions fluctuate from extremely cold to very mild weather, thus using fuel efficiently and providing complete comfort. Johnson Service Co., Milwaukee 2, Wis.

PACKAGED CHIMNEY

Now being marketed is a light-weight, prefabricated flue, known as the *Packaged Chimney*.

This chimney is supported entirely from the ceiling and roof and is said not to require any brick work. The central flue pipe is a porcelain enameled metal liner. Long fiber asbestos insulation is placed between the liner and an outer metal casing.



Installation time for prefabricated chimney is reported to be about two man hours

Advantages claimed for the chimney are: ease of installation, durability, efficient operation and low cost. Installation time is said to be about two man hours per average job. The chimney is reported listed as acceptable by Underwriters Laboratories for all fuels. Condensation Engineering Corp., 122 S. Michigan Ave., Chicago 3, Ill.

DEHUMIDIFIER

The *DryNamic* automatic dehumidifier, which uses silica-gel as the absorbing agent, is made in two models for moisture loads of 12 or 24 lbs. of water per day.

The units may be controlled to operate at a selected relative humidity by plugging a specially adapted humidistat into the casing. DryNamic Div., Cargocaire Engineering Corp., 15 Park Row, New York 7, N. Y.

GREASE INTERCEPTOR FLOW CONTROL TEE

Now being marketed is a *Flow Control Tee* designed to distribute properly the discharge from one or more fixtures through a grease interceptor. Such control is said to be essential to foolproof operation of an interceptor — to guard against overloading due to sudden surges from the sink or other fixtures and to maintain efficient operation.

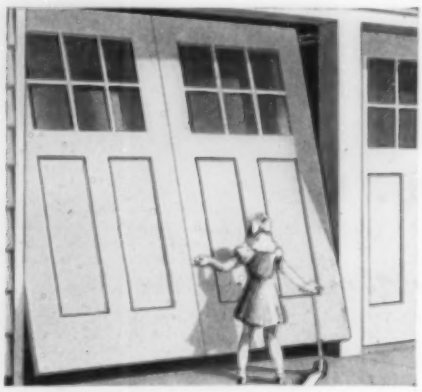
In addition to assuring positive, efficient operation of an interceptor, the Tee is designed for proper venting.

A cleaning handle is incorporated with the Tee so that solid material that becomes wedged in the orifice can be removed. J. A. Zurn Mfg. Co., Plumbing Div., Dept. Z-3, Erie, Pa.

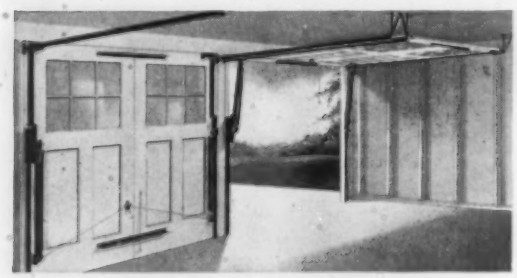
(*Continued on page 196*)

EASY...

EVEN FOR A CHILD!



To Provide the Newest, Most Modern Overhead Door Convenience



Specify

Richards-Wilcox nine ninety nine 999

GARAGE DOOR HARDWARE

Ordinary obstacles, and seasonal "headaches" such as slush, snow, and freezing temperatures are nothing to worry about when garage doors have been converted to the *overhead* door convenience made possible by Richards-Wilcox Garage Door Hardware. And with the new R-W nine-ninety-nine line the conversion process is swift, easy, economical. Everything needed for installation and operation, all hardware including tracks, comes complete in one carton. Requires only ½" headroom.

For modernization, or in planning new structures, specify overhead garage doors with R-W 999 Hardware, and be sure of doors that will function smoothly, quietly, effortlessly—so easy even a child can operate them. For further information about R-W 999 Garage Door Hardware, call the nearest Richards-Wilcox office, or write for free folder.

1880 1948

LEADERS IN DOOR HARDWARE OVER 68 YEARS

Richards-Wilcox Mfg. Co.

A HANGER FOR ANY DOOR THAT SLIDES

AURORA, ILLINOIS, U.S.A.

Facing tile — for PACKING PLANTS

when you want more than just a wall

You create *more* than walls when you design packing plant interiors in Structural Clay Facing Tile.

You provide a finish that actually resists bacteria. Facing Tile is impervious to even the tiniest unsanitary trouble-maker. This means valuable help in fighting shrinkage and trim losses.

You provide a surface that washes down clean, and quickly, with soap and water or hosing. It never needs refinishing or redecorating. This means a real saving on maintenance costs every day of the year.

You provide interiors that can take it. Facing Tile is a heavy duty material that stays like new under the toughest treatment.* It will not crack, scratch, mar or decay.

You give employees a light, bright working place, a cheerful, sparkling-clean interior where they can do a better job.

Facing Tile allows flexible design. It builds *fast* and at less cost, because it's a wall and a finish *in one!* It's fireproof, extra-strong structurally. And it's *available*, glazed or unglazed, in efficient modular sizes. For additional data contact any Institute member or see Sweet's Catalog.

SEND FOR NEW 90-PAGE MODULAR FACING TILE HANDBOOK

Free to registered architects and engineers. Write desk AR10 of the Institute on your letterhead. Fifty cents to others.

*Exterior type material should be used in freezing rooms.

FACING TILE INSTITUTE

1756 K STREET, N. W. • WASHINGTON 6, D. C.

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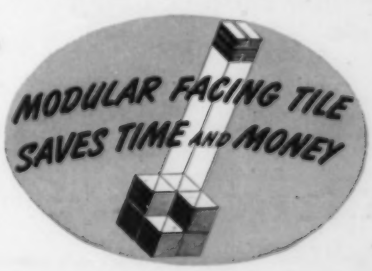
Continental Clay Products Co., Kittanning, Pennsylvania
Charleston Clay Products Co., Charleston 22, West Virginia
Hanley Company, New York 17, N. Y.
Hydraulic Press Brick Co., Indianapolis, Indiana



Mapleton Clay Products Co., Canton, Ohio

INSTITUTE MEMBERS

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National Fireproofing Corp., Pittsburgh 12, Pennsylvania
Stark Brick Company, Canton, Ohio
Standard Clay Manufacturing Co., New Brighton, Pa.
West Virginia Brick Company, Charleston, West Virginia

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 194*)

AIR METER

Anemotherm is the name for a new three-way air meter which can be handily used for adjusting and testing equipment used for heating, ventilating and air conditioning. The meter gives air velocity, air temperature and static pressure readings.

The probe is small and is attached to a long flexible cable so that readings can be made in such places as the neck of an air diffuser. The Anemotherm measures air velocity from 10 to 5000 fpm; temperatures from 30 to 155° F; and either negative or positive static pressure in inches of water, from 0.05 to 10 in. positive and from 0.05 to 4 in. negative.

Because the instrument is designed to measure air velocity accurately regardless of direction of air flow, it can provide data on low air movement of a turbulent nature. The Anemotherm is said to be particularly valuable in measuring velocity and temperature of air confined in ducts, air currents in free spaces, and air entering or leaving air inlets or outlets. Anemostat Corp. of America, 10 E. 39th St., New York 16, N. Y.

SELF-POWERED TELEPHONE

Especially designed for applications where power supply is unavailable or uncertain is the *Wheeler Self-Powered Telephone;* the unit requires no batteries or other power supply. The telephone system is supplied as standard for two-station operation. The manufacturer claims that both talking and ringing circuits are entirely free of electrical sparks, and that the units generate no heat.

Self-powered telephones are engineered for service up to 20 miles in distance

The telephone unit is said to be able to withstand rough usage, extreme temperature variations, high humidity, corrosive fumes, and shock or vibration.

Reported to function with equal efficiency whether used inside or outdoors, the phones are described as being used in installations up to 20 miles. The Wheeler Insulated Wire Co., Inc., Waterbury, Conn.

PRE-FINISHED PANELING

A new pre-finished, low cost paneling called *Amerwood* that is said to enhance the natural beauties of wood has been developed by the Lehwood Corp. Boards are first processed to remove a portion of the spring growth and increase surface tension of the hard summer growth. They are then sanded, dry pigment is applied and finally finished with a clear protective coating followed by a wax and buff to a final silk-like smoothness. The result is paneling ready for installation. Amerwood is supplied in standard

(*Continued on page 198*)

Ellison

the BALANCED DOOR

the door that lets traffic through *quickly*

Your copy of the new Ellison catalog is now ready. Write the factory Dept. R-1

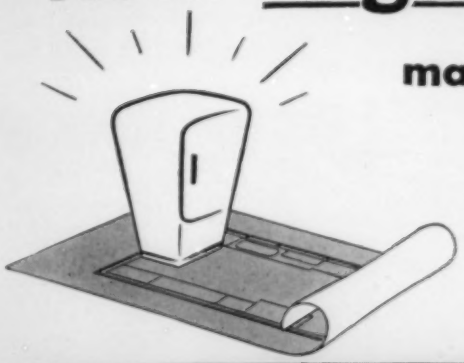
Ellison

ELLISON BRONZE CO., INC.

Jamestown, New York

New Frigidaire "Compact-Six"

makes same floor area yield 50% more storage space!



HERE is a refrigerator that combines *capacity* with *compactness* . . . a refrigerator that provides adequate storage space even where kitchen area is severely limited, as in many of today's small homes or apartments.

Entirely new design does it—creates a refrigerator that's a "4-footer on the outside, a 6-footer on the inside." Note all the *extra* storage space, gained without sacrifice of floor area!

See all these other reasons why this new Model MJ-6 Frigidaire Refrigerator helps architects and builders make the most of small-home plans—

Flat top serves as extra kitchen shelf.

Big freezer holds 15 lbs. of frozen foods. T*wo* fast-freezing shelves. Attractive freezer door.

Instant ice service. Two generous-size Quickube Trays.

Large Hydrator for fresh fruits, vegetables.

Meter-Miser is simplest cold-making mechanism ever built: uses amazingly little electric current.

Also—one-piece, all-steel cabinet, Dulux finish, porcelain-on-steel food compartment with acid-resisting floor, rust-resisting shelves, aluminum cold-storage tray, Cold-Control.

Cabinet dimensions: height, 51 11/16"; width, 24 7/16"; depth, including hardware and rear ventilating space, 26¾".

Capacity 6.0 cu. ft. storage space; 11.6 sq. ft. shelf area. (NEMA standards.)

See your nearest Frigidaire dealer or write Frigidaire Division, General Motors Corporation, Dayton 1, Ohio (In Canada, Leaside 12, Ontario) for address of nearest district office.

You're twice as sure with two great names

FRIGIDAIRE

made only by

GENERAL MOTORS

Refrigerators, Electric Ranges, Water Heaters, Home Freezers, Kitchen Cabinets, Automatic Laundry Equipment, Commercial Refrigeration and Air Conditioning Equipment

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 196*)

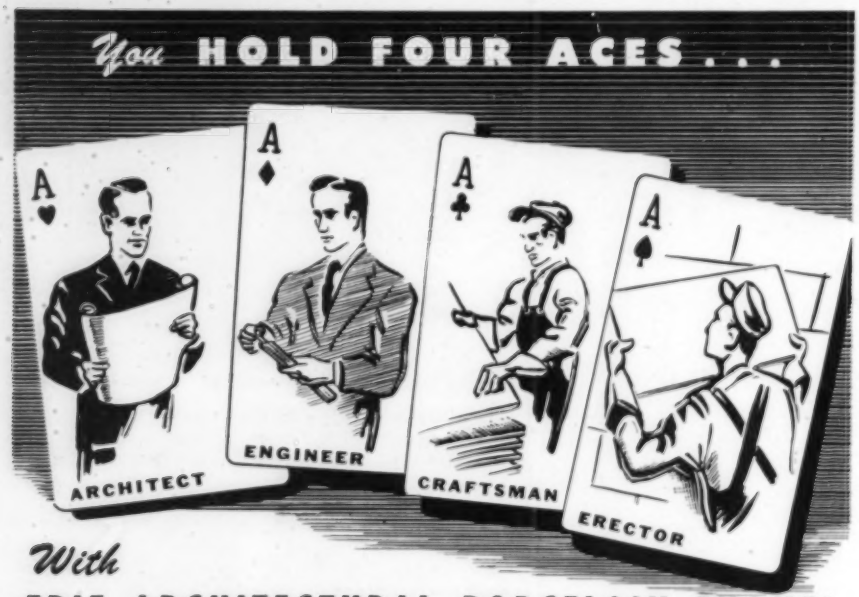
widths and lengths and in ¾-in. thickness. For convenience in installation, edges are ship-lapped. Lehwood Corp., 1003 Ironwood Drive, South Bend 14, Ind.

ELECTRONIC COMPUTER

An office size electronic computer, reported to be capable of solving intricate industrial and research problems, is now available commercially.

The *REAC* (Reaves Electronic Analog Computer) is said to have found extensive uses in many fields of engineering research and to be applicable in architectural and civil engineering in the solution of vibration analysis and dynamic structural stress problems.

This analyzer is said to be able to simulate a structure — bridge, building, tower — by means of mathematical relationships which are solved as a function of time in response to simulated loads representing winds, moving trucks, trains, etc. The REAC is said to permit rapid and accurate means of arriving at an optimum structural design without resorting to expensive trial and error methods. Reeves Instrument Corp., 215 E. 91st St., New York 28, N. Y.



With

ERIE ARCHITECTURAL PORCELAIN ENAMEL

For Service Stations, Food Stores, Restaurants, Offices and Factory Buildings . . . for remodeling store fronts, The Erie Enameling Company puts 4 aces in your hand.

(1) Your Architect recommends design and color.

(2) The Erie Enameling Company engineers work out your plans in practical form.

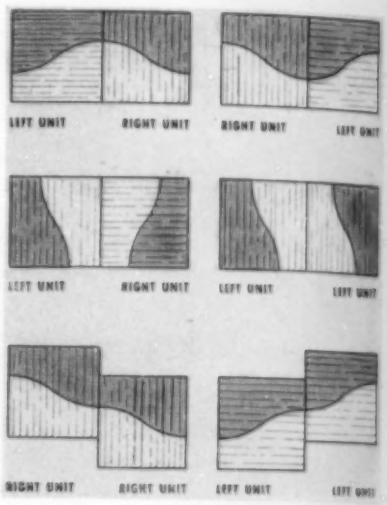
(3) Erie processes of manufacture assure enduring porcelain enamel ready for speedy and accurate erection.

(4) Erie gives you years of "know-how" in actually erecting your Architectural Porcelain Enamel.

Before You Modernize . . . Consult With Us

WRITE Today FOR THIS BULLETIN

ERIE ENAMELING COMPANY
ERIE, PENNSYLVANIA
Member of Architectural Division Porcelain Enamel Institute.



Cutting standard tile units on a diagonal curve provides curved design motifs

CURVED DESIGNS WITH RUBBER TILE

Curved design motifs in resilient flooring are now possible with standard units. The standard units consist of two halves of a square rubber tile cut on a diagonal double curve.

A wide variety of curved patterns, including large solid fields with scalloped borders to small medallions repeated at regular intervals, may be obtained with simple installation techniques.

According to the manufacturer, any curved design in resilient flooring before the introduction of *Wavedge* involved hand cutting and required precision craftsmanship.

The curved tile units are cut from 6 and 9 in. squares. Both left and right hand units are available. The left units are cut with the marble pattern running horizontally; right units with the marble pattern running vertically. Thirty colors are available. The Danbury Rubber Co., Inc., Danbury, Conn.

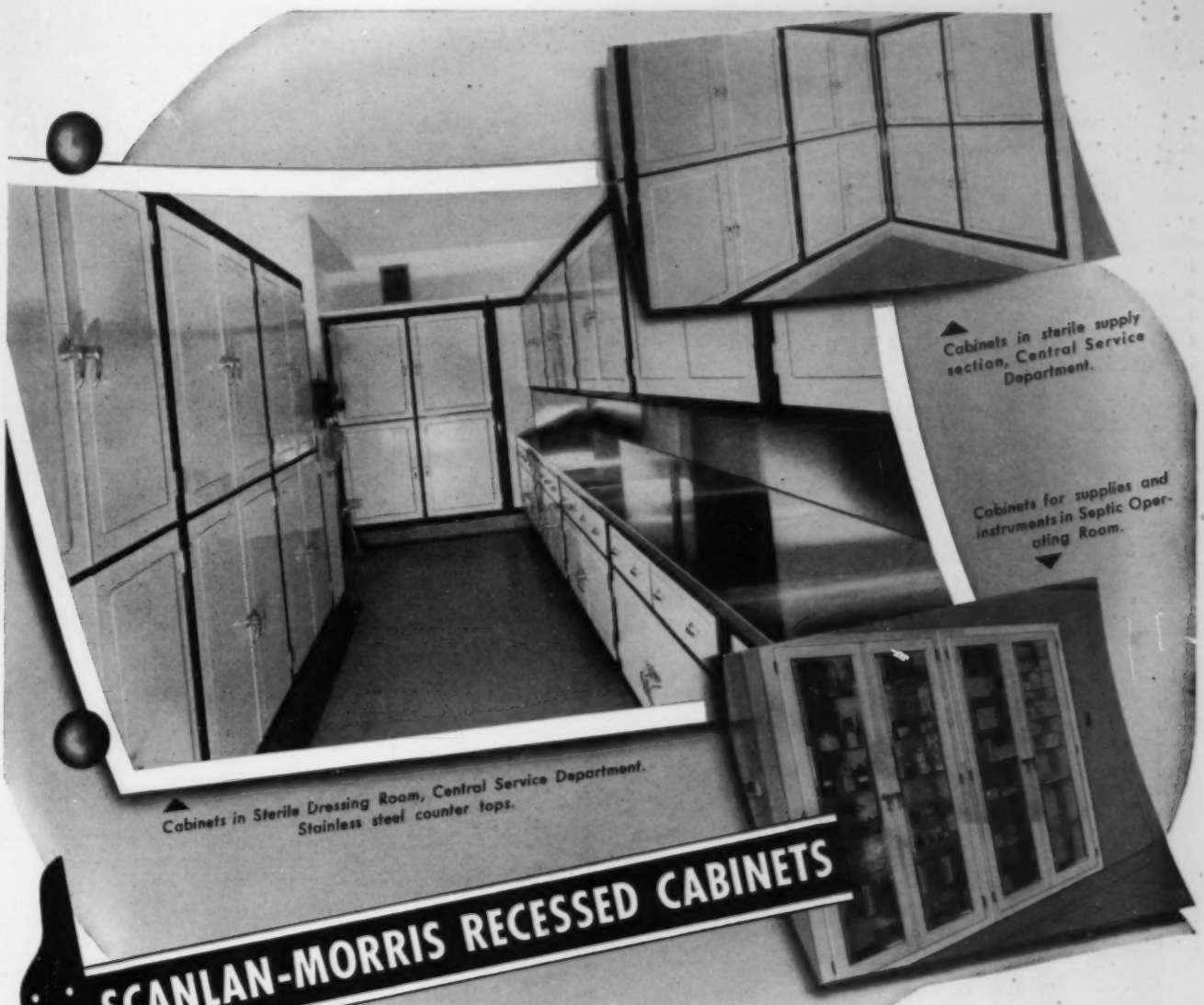
WINDOW SHADES

New window shades that are claimed to be fire-resistant, washable and sunproof have been developed from a cloth coated with *Vinylite* resins. The new type shades are available for both homes and public buildings. Stewart Hartshorn Co., 250 5th Ave., New York 1, N. Y.

RADIATOR VALVE

Recently introduced is a radiator valve that is said to operate silently on high or low pressures and to release air

(*Continued on page 200*)



Cabinets in sterile supply section, Central Service Department.

Cabinets for supplies and instruments in Septic Operating Room.

Cabinets in Sterile Dressing Room, Central Service Department. Stainless steel counter tops.

SCANLAN-MORRIS RECESSED CABINETS

. . . custom-built to meet hospital requirements

Scanlan-Morris recessed cabinets, built to cover the individual requirements of the hospital, are made of furniture steel, with frames of flat steel, electrically welded. All corners have double-lapped sweated seams, insuring dust-proof construction.

Metal doors, paneled or plain, as specified, are of reinforced hollow construction. Metal shelves are furniture steel with apron 1" deep double-turned for extra strength. Glass doors have plate glass panels, held in place by a metal holding frame. Glass shelves are ¼" plate glass with ground and polished edges.

All shelves are adjustable at ½" increments. Drawers are of sheet steel, with frictionless slides.

Cabinets may be built with any number of compartments, or in combination with different types of units, as desired.

Exposed surfaces are finished in high-grade enamel, hand-rubbed and baked, in any color to harmonize with color of walls or other equipment. Fittings are chromium plated.

Mail the coupon for detailed information or submit your problems with floor plans for layout suggestions, without obligation. Helpful information on Scanlan-Morris hospital sterilizing equipment and surgical lights also will be supplied on request.

THE *Ohio Chemical* & MFG. CO.

OHIO

1400 East Washington Ave., Madison 3, Wisconsin

Represented in Canada by Oxygen Company of Canada Limited, Toronto and Montreal, and Internationally by Airco Export Corporation, 33 West 42nd Street, New York

BRANCH OFFICES IN PRINCIPAL CITIES

THE OHIO CHEMICAL & MFG. CO. AR
1400 East Washington Ave., Madison 3, Wis.
Send information on ☐ Scanlan-Morris Recessed Cabinets.
(Please attach professional card or letterhead)

Name_____

Address_____

City_____ State_____ AR

(*Continued from page 198*)

from the vent without spraying water under any operating conditions.

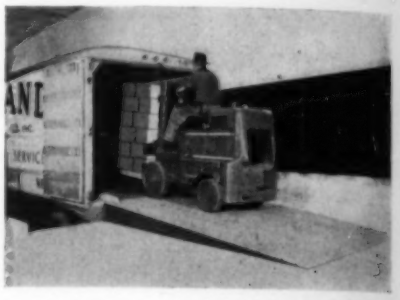
The manufacturer of this new valve claims that most troubles associated with the escape of water from radiator valves are caused by bubbling mixtures of air and water in the valve. Such a mixture does not have sufficient density to raise the float, thus permitting the bubbles of air to pass out of the valve, carrying water with them.

A large separating chamber is provided in the *Dri-Vent* which is said to take air out of the bubbling mixture, divert the air to a separate chamber and into the atmosphere, and permit only the water to reach a reservoir under the float which causes the float to rise and to regulate the flow of air through the air vent.

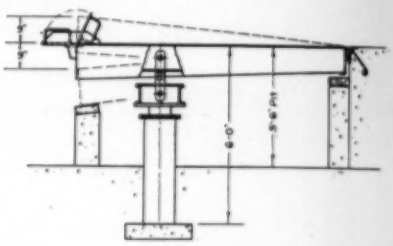
It is claimed that this controlled venting of air prevents too rapid steam flow into the radiator; water formed from the condensing of steam can flow back into the steam pipe instead of accumulating in the radiator to cause gurgling and pounding. Frank D. Riggio Co., 38 Orient Way, Rutherford, N. J.

ADJUSTABLE LOADING RAMP

Recently developed is a hydraulic loading ramp which makes possible the direct loading of trucks or trailers without the use of steel plates, bridge ramps or other conventional methods.



Trucks and trailers loaded without steel plates or bridge ramps by application of a hydraulic loading ramp, the Leva-Dock



The loading operation is said to present a serious problem because (1) truck bed heights vary as much as 12 in.; (2) the truck bed moves up or down as loading or unloading progresses. The seriousness of the problem is said to have been increased with the use of power vehicles handling heavy loads.

The *Leva-Dock* is a hinged platform supported by a hydraulic jack. With the front end of the platform raised, the truck or trailer is backed into position for unloading or loading. Then the Leva-Dock is lowered until the heavy supporting arms rest on the truck or trailer floor. The gap between the Leva-Dock and the vehicle is bridged by a steel "throw-over" bridge. The hydraulic system is then released so that the front end of the platform is free to travel up or down with the truck bed as truck springs expand or compress during the operation. Rotary Lift Co., 1054 Kansas St., Memphis, Tenn.

PORTABLE HEAT GENERATOR

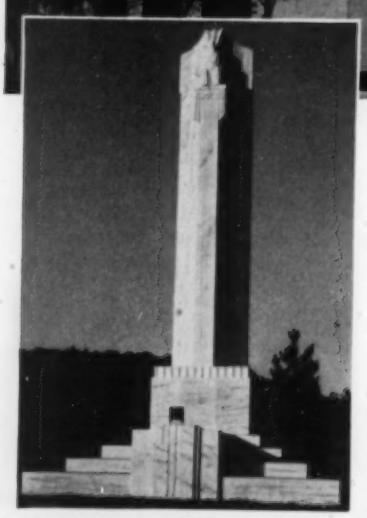
Designed for such diverse uses as drying plaster and paint, thawing of frozen areas, preheating engines, heating warehouses etc. is the *Eco-Temp Heat Generator-Dispenser*.

The Eco-Temp is portable, being

(*Continued on page 202*)

Select VERMONT MARBLE...
for Commerce or Commemoration

I. Magnin and Company Store, Beverly Hills, California. Imperial Danby Exterior Marble. Timothy L. Pflueger, Architect.



I. B. M. War Memorial, Endicott, New York. Imperial Danby Marble

ATTRACTIVE and appropriate architectural design in commercial and industrial structures is one of the greatest contributions by our architects of today. An outstanding example is the I. Magnin and Company Store of Beverly Hills.

How naturally and gracefully such taste may lead to group action in building appropriate and lasting memorials is demonstrated by the International Business Machines War Memorial at Endicott, New York. The idea was conceived and the whole project financed and executed by the employees in memory of their associates who died in World War II.

VERMONT MARBLE

VERMONT MARBLE COMPANY • PROCTOR, VERMONT

Branch Offices:

Boston • Chicago • Cleveland • Dallas • Houston • Los Angeles • New York • Philadelphia • San Francisco

Ontario Marble Co. Peterboro, Ont.

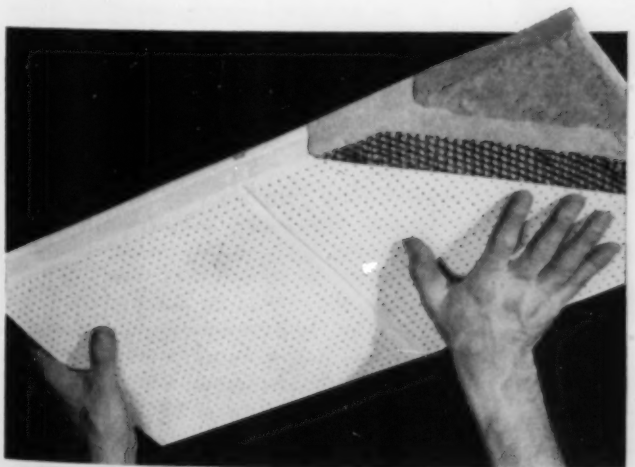
THUNDER IN THE CORRIDORS?

A HOSPITAL corridor can be a booming echo chamber! Ordinary footsteps sound like thunder-claps. It's a trying condition disturbing to both patients and staff. But it can be easily remedied:

You can stifle corridor noise with Gold Bond Acoustimetal. It's designed to insure maximum noise reduction —and to give high light reflection. And it's *Fireproof* to fit new building code specifications.

Best of all, maintenance is cut to an all time low! Each tile is an access panel, for quick repairs to wiring, piping, and air ducts. The 12″ x 24″ perforated pans snap into patented T-bars, and these T-bars can be mounted any distance from the ceiling which may be required to provide space for pipes, cables, and ducts. They are as adaptable to remodeling as to new building.

What's more, Acoustimetal can be washed repeatedly and even repainted without loss of sound absorption. Write now for the new Acoustimetal folder for complete details. Fully described in Sweet's, too.



Gold Bond Acoustimetal—The Fireproof, washable acoustical tile for exacting sound control.

You'll build or remodel better with

Gold Bond

NATIONAL GYPSUM COMPANY • BUFFALO 2, N. Y. •

Over 150 Gold Bond Products including gypsum lath, plaster, lime, wallboards, gypsum sheathing, rock wool insulation, metal lath products and partition systems, wall paint and acoustical materials.

(*Continued from page 200*)

mounted on rubber tired casters. All that is required to operate the unit is a supply of fuel oil; an electric outlet (110 v, 60 cycles, single phase); an opening for a smoke pipe; water supply and hose.

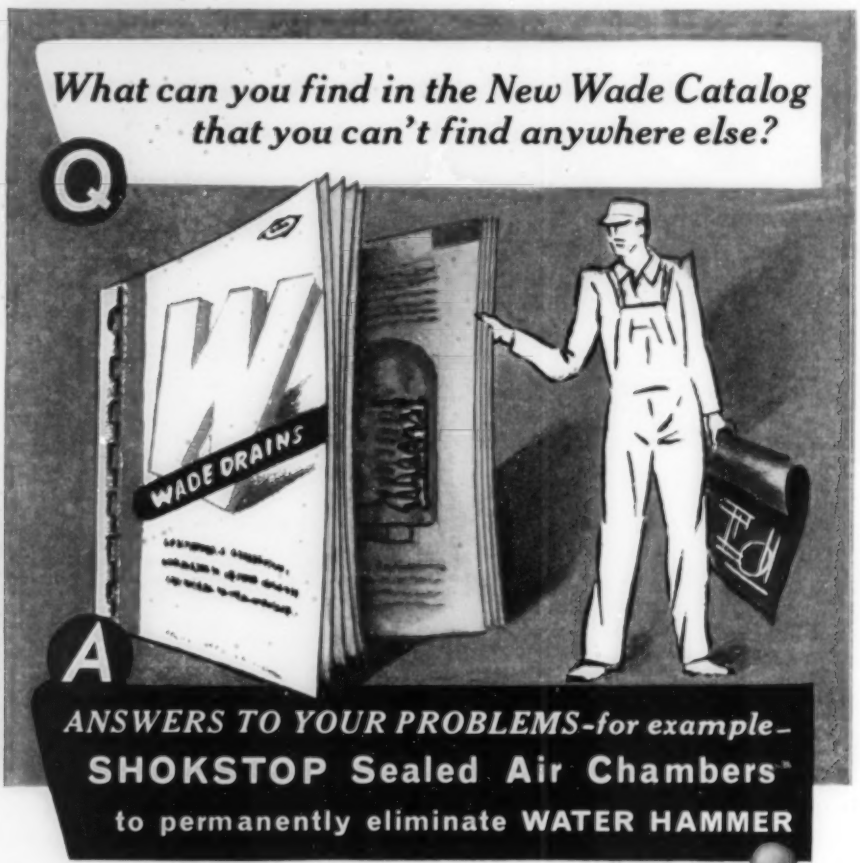
This heating unit is automatic and burns 1½ gal. of no. 2 fuel oil per hour. Both steam and hot water units are available. The steam unit has a capacity of 181,000 Btu per hr. and the hot water unit 113,000 Btu per hr. The steam generator is 26½ in. wide, 61 in. long, and 78 in. high; the hot water unit has dimensions 26½ in. wide, 48 in. long and 78 in. high. Arthur C. Baumann, 7011–21 Grays Ave., Philadelphia 42, Pa.

MICROFILM CAMERA

An improved, 42-in. microfilming camera is now in production which is designed to microfilm unusually large or long tracings while the copy is in motion and subsequently to project flow enlargements on emulsion paper or cloth.

Large drawings are said to be "microcopied" in a few seconds each on this new camera at very high reduction ratios, regardless of the length of the drawing.

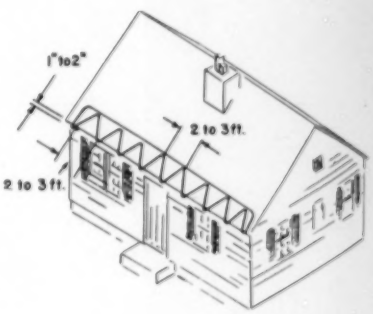
The *90–05 Triple-Purpose Fliofilm* has been built to provide a compact structure, free of the type of vibrations that are said to have formerly resulted in poor microfilm images. The camera uses either 16 or 35 mm. film, with feed speed of either 30 or 60 ft. per minute. Diebold Inc., Fliofilm Div., Westport Ave., Norwalk, Conn.


What can you find in the New Wade Catalog that you can't find anywhere else?
Q
WADE DRAINS
A
ANSWERS TO YOUR PROBLEMS-for example-
SHOKSTOP Sealed Air Chambers
to permanently eliminate WATER HAMMER

How many quick-acting valves do **you** specify, sell, or install? Do you know that every one—whether in a lavatory, dishwasher, home laundry, or **any** equipment that shuts off quickly—is a source of water hammer shock waves that can damage pipes and appliances?

And—do you know that **only** Wade manufactures SHOKSTOP Wacor Sealed Air Chambers, whose hermetically sealed metal bellows can absorb **millions** of water hammer blows? If you don't—if your experience **only** covers old-fashioned air chambers that waterlog quickly—send for your copy of our **new catalog** today. It's **full** of practical information on hundreds of products—to help **you** solve your toughest plumbing and drainage problems!

WADE MANUFACTURING COMPANY
ELGIN Illinois
Fine Drains and Plumbing Specialties since 1865



Protection against damage to houses due to ice dams available with heating cable

HEATING CABLE TO PREVENT WINTER DAMAGE

Heating cable is available for installation on house roofs to prevent damage to walls and ceilings due to ice dams which often form on roof eaves during the winter.

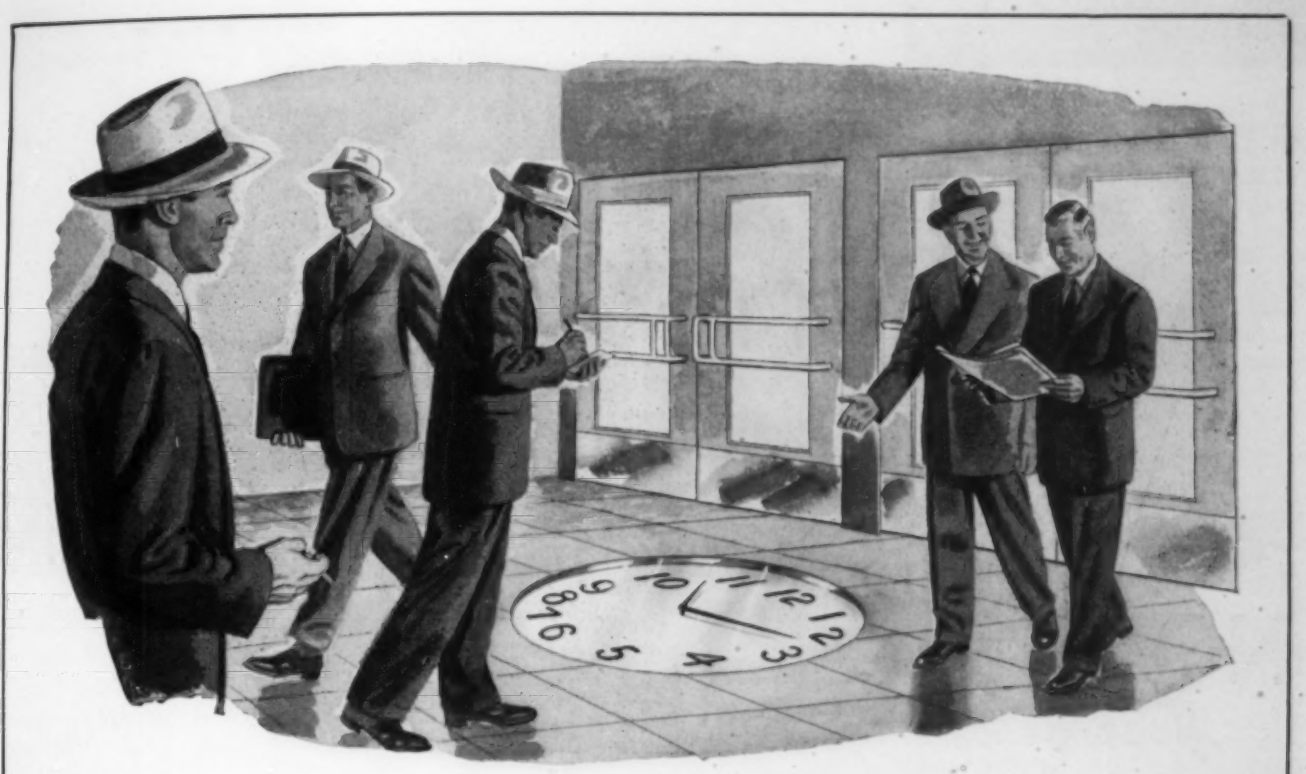
For the average home, the manufacturer recommends mounting the cable so as to cover approximately a 3-ft. strip bordering the eaves with a zig-zag design. Sixty ft. of cable are said to take care of a section of roof 20–25 ft. long. For extremely severe winter conditions 60 ft. of cable are used for a 15-ft. strip, 3 ft. wide.

On homes equipped with eave gutters and downspouts, the sawtooth mounting pattern is supplemented by laying or hanging a double length of heating cable in the gutter or downspout. In metal gutters, wooden strips or blocks are set beneath the cable to act as insulators and to prevent excessive heat loss.

When gutters are not to be equipped with the cable, a modified sawtooth pattern is installed in which each tooth formed by the cable extends 1 or 2 in. over the edge of the gutter.

The lead-covered, insulated cable comes in 60-ft. lengths and has both ends connected to an ordinary attachment plug; it operates on 110 volts. General Electric Co., Apparatus Dept., Schenectady 5, N. Y.

(*Continued on page 204*)



A clock in the floor?

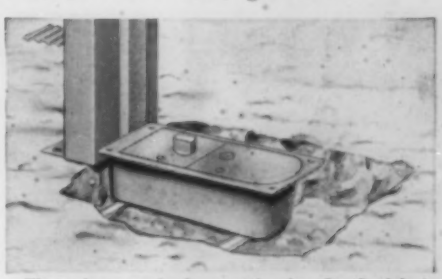
. . . Novel idea, perhaps, but the floor is no place for a clock . . . *or a door closer!*

● Why? Because floor dirt, scrub water and tracked-in weather would soon ruin the clock. They always foul up door closers placed in the floor, too, boosting the owner's maintenance costs and calling for replacements too soon for sensible economy.

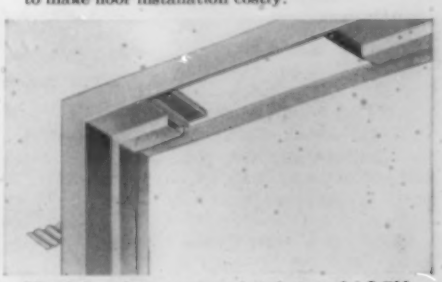
We're NOT prejudiced; we've made many thousands of the world's finest floor type closers, and still make them for people who want to conceal the closers, but for structural reasons cannot put them overhead.

Door closers belong overhead, not underfoot!

LCN overhead concealed door closers are hidden in the head frame or top of door, out of sight and safe from fouling. They do a superior job of door control at generally lower installed cost and lower maintenance cost. LCN catalog 11-a, with 33 pages of pictures and data showing how to select the best closer for each door, gladly sent on request. Address LCN Closers, Inc., 466 W. Superior St., Chicago 10, Ill.



Floor closer ready for grouting in. On-the-job labor, special thresholds and other extras tend to make floor installation costly.



Metal door frame prepared at factory for LCN overhead concealed closer. Wood frames simply prepared at low cost.

LCN

OVERHEAD CONCEALED, FLOOR CONCEALED AND EXPOSED TYPE DOOR CLOSERS

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 202*)

AIR CONDITIONER

Mitchell M-75 is a complete self-contained unit providing 5-function room air conditioning; it cools, dehumidifies, circulates, ventilates and filters.

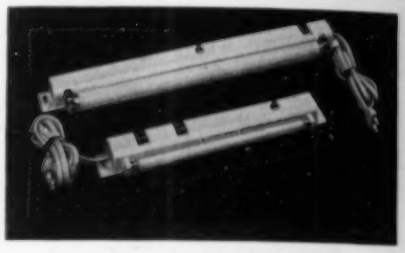
This air conditioner is designed for window installation and may be removed at any time. The M-75 is said to operate efficiently in all room areas measuring up to 400 sq. ft. Sound insulation and rubber mounting are provided.

The refrigerating unit has a ¾ ton capacity. The cabinet is made entirely of steel in a metalescent taupe finish. Operation is on 110–125 volts, 60 cycle. Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14, Ill.

HOME PLANNER

The *Homograph Planner Kit* is described as practical means for the layman to get his home building ideas down on paper so as to save time for the architect and builder in learning what the prospective builder wants.

The kit contains a 64-page descriptive book, special modular graph paper, rulers, scale drawings of floor plans, exterior elevations, doors, windows, kitchen and bath layouts and drawings of exterior materials. The Homograph Planner Corp., 911 13th St., N. W., Washington, D. C.



Counter lights have convenience outlets

KITCHEN COUNTER LIGHT

Two new fixtures for under-cabinet lighting in kitchens are available for either permanent or portable installation. These 8 and 15 watt fluorescent fixtures can be fastened to either steel or wood cabinets. Knockouts are provided for permanent installation, or cord and plug for wall receptacle are provided for portable installation.

Both sizes can be furnished with one or two standard convenience outlets to aid working efficiency and to eliminate the use of long extension cords. Guardian Light Co., 301 Lake St., Oak Park, Ill.

AIR VALVE

A simple, automatic air valve has been developed by the Dole Valve Co. to eliminate air from the radiators and convectors of hot water heating system.

Ease of adjustment is said to be one of the outstanding features of the valve. By using a screwdriver the *Dole 16* is set to perform: (1) manual shut-off, (2) automatic air elimination and (3) manual venting. Dole Valve Co., 1933 W. Carrol Ave., Chicago 12, Ill.

LEAD-FREE PAINT

An entirely lead-free, sun-proof paint for homes has been developed which is claimed not to darken in industrial areas where sulfurous gases are present, and at the same time is said to possess superior durability and color-holding qualities.

Reported outstanding qualities are: (1) excellent brushability; (2) rapid drying rate; (3) smooth finish; (4) high hiding; (5) resistance to discoloration; and (6) durability.

The new paint is now available in white and colors. While primarily designed for use on wood surfaces, the lead-free paint is said to be equally ef-

(*Continued on page 206*)

NOW! floor designing made easy with the NEW Amtico "Plan-a-Floor"

Here is the new Amtico floor planning display cabinet that leading flooring contractors are using to demonstrate Amtico Rubber Flooring. Almost unlimited color combinations are at your fingertips, ready to make truly individual floors that blend or contrast with any decorative theme.

The 4" x 4" marbleized tile samples, feature and border strips in all eighteen style-wise colors, are conveniently arranged within easy reach. In just a few minutes you can create a representative sample of the entire floor. Guesswork is ended; hours of paperwork eliminated; you can see how the floor will look!

Perhaps you could utilize this idea-builder and time-saver. We will send this all steel display cabinet, complete with all rubber samples, shipped prepaid anywhere in the U.S.A. Take a minute to send the coupon, and save hours on your floor designing problems.

AMERICAN TILE & RUBBER COMPANY
Perrine Ave., Trenton 2, New Jersey

Send us the new Amtico "Plan-a-Floor" Display and Merchandising Cabinet, including a supply of rubber tile, feature and border strips. We understand the total cost will be $40, shipping charges prepaid.

Firm Name.....
Street.....
City.....*State*.....
Signed.....

AMERICAN TILE & RUBBER CO.
TRENTON, NEW JERSEY

—*for the great hotels of the world*

Forty-seven floors of luxury, occupying an entire city block, the famous Waldorf-Astoria has no equal in the hotel world! Into the building of this dream hostelry went the finest architectural and engineering experience in the land . . . and the most modern and appropriate materials and equipment that money could command.

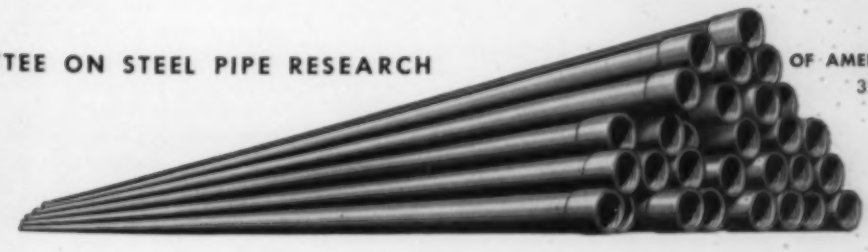
The Waldorf-Astoria's great labyrinth of *steel piping,* for the heating lines, soil, waste and vent lines, fire, air conditioning, and vacuum lines, can be measured in terms of hundreds of miles and thousands of tons!

For such vital services, *steel pipe is the first choice* of technical men who judge the qualifications of every material and product in terms of adaptability, serviceability, durability, and cost. These qualities of *steel pipe* which made it the predominant choice for this cathedral of comfort are the same qualities that have made it the predominant choice for all types of buildings the country over.

Yes, *steel pipe is first choice!*

The interesting story of "Pipe in American Life" will be sent upon request.

COMMITTEE ON STEEL PIPE RESEARCH
OF AMERICAN IRON AND STEEL INSTITUTE
350 Fifth Ave., New York, N. Y.



(*Continued from page 204*)

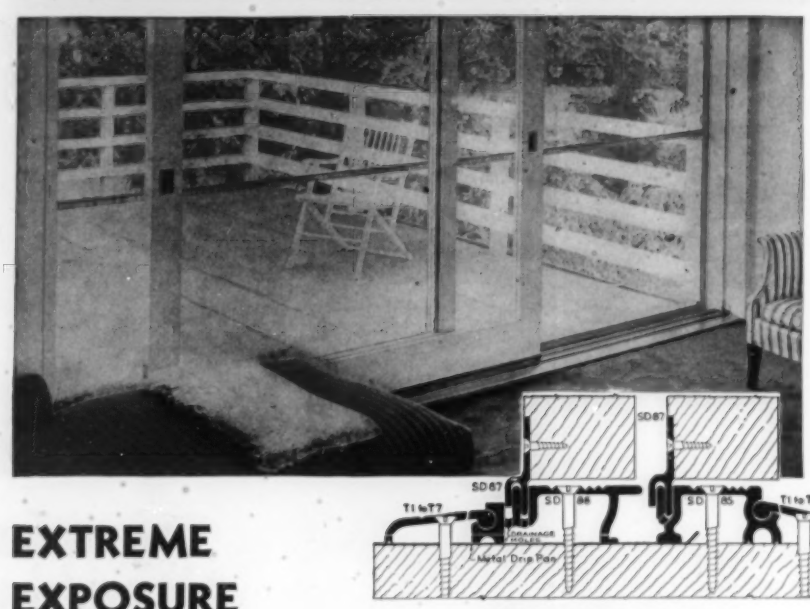
fective on brick or masonry. Pittsburgh Plate Glass Co., 632 Duquesne Way. Pittsburgh 22, Pa.

SEALING STRIP

The problem of how to seal successfully cracks at the junction of bathtub and walls is now said to be solved with the introduction of a white, pliable, coved strip, especially designed for this purpose.

Consisting of a flexible, plastic-base material, the strip can be applied so as to follow the contours or irregularities of the cracks and thus cover the openings, sealing them against the entry of steam and water. No special tools or equipment are said to be necessary for application. A waterproof, plastic cement is applied with a brush to seal the strip firmly to bathroom surfaces. The sealing strip is packaged in 15-ft. lengths. Keller Products Inc., 1880 Roxbury Rd., East Cleveland 12, Ohio.

WEATHER STRIPS FOR SLIDING DOORS



SADDLE NO. 850-A FOR ONE OR TWO PAIRS OF SLIDING DOORS

EXTREME EXPOSURE

But Thoroughly Weatherproof

The above home, atop a high cliff, illustrates a wise use of Accurate Metal Weatherstrip for the sliding doors. For here, in the most inclement weather, rain or snow cannot beat its way in when the doors are closed. Nor can the smallest insects find their way through. The Accurate brass saddle for sliding doors has no substitute. It is another of the improvements pioneered and patented by the Accurate organization in the past 43 years to make windows and doors weatherproof.

WRITE FOR SPECIAL FOLDER

TRADE MARK ACCURATE REG. U.S. PAT. OFF.

ACCURATE METAL WEATHER STRIP CO., Inc.

215 East 26th STREET, NEW YORK 10, N. Y.

ELECTRIC TIME SYSTEM

An *Electric Time System* in which clocks are self-regulated electronically without special clock wiring has recently been developed.

In any building which has supervised, 60 cycle a-c current, *IBM* synchronous motor indicating clocks can be connected to a regular wall plug or light socket. Each clock is checked individually and automatically every hour for uniformity with system time.

In the new system, a master time control is installed and operated from the same power source to which the indicating clocks are connected. This control is the director of the entire system and keeps all units in agreement with it. Every hour the control, through action of an electron tube in a transmitter, sends a supervisory impulse out over the regular electrical lines. A simple receiver in each indicating clock takes the impulse and automatically corrects the clock.

Another feature of this system is automatic signalling — bells, horns, etc. — through the program unit of the master control. International Business Machines Corp., World Headquarters Bldg., 590 Madison Ave., New York 22, N. Y.

CIRCUIT BREAKERS, IMPROVED PANELBOARD

Now in production by the Frank Adam Electric Co. are enclosed, branch circuit, circuit breakers in a minimum size enclosure.

The units are fabricated with new, Type A. C. Junior Circuit Breakers, and are built to Underwriters Laboratories standards.

Available for flush and surface mounting, the units are said to have ample wire space and conveniently located knockouts.

Circuit breakers are mounted with independent screws to facilitate removal or capacity changes of the breakers. The entire assembly and mounting bracket may be removed to simplify wiring.

The units are designed for controlling lighting in garages, residences, business establishments and for applications where small motors are used on machinery.

Panelboard

The same manufacturer has redesigned their *LNTIP* leader type panelboard with the following reported improvements: (1) available for both 3-phase, 4 wire and 3 wire, single phase bussing; (2) "sequence bussing" is now a standard feature, providing better balance across the main bus and making adjacent circuits always of opposite polarity; (3) name plate has been de-

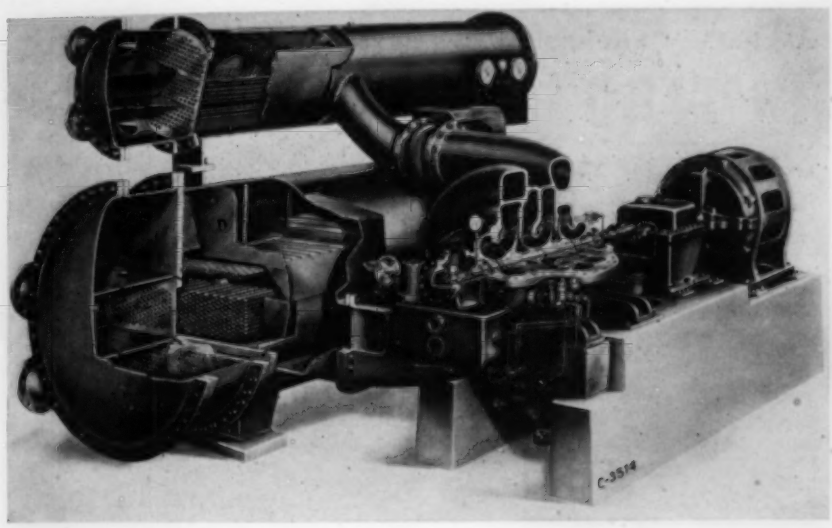
(*Continued on page 208*)

WORTHINGTON

Air Conditioning and Refrigeration Report

Worthington Pump & Machinery Corporation, Harrison, New Jersey

LESS FRICTION AND TURBULENCE LOSS IN "VOLUTE" COMPRESSOR DESIGN



The use of "volutes" in the design of the centrifugal compressor which forms a part of the Worthington Centrifugal Refrigeration System provides greater efficiency because the smooth, obstruction-free gas passages reduce friction and turbulence loss.

An exclusively "Worthington" arrangement of the volute passages results in virtual elimination of radial thrust. In the first compression stage, a double volute balances any normally-developing radial thrust; in the second and third stages, the volutes are offset 180 deg. to counterbalance the radial thrusts.

Similarly, the arrangement of impellers is such that the axial thrust produced by the third-stage impeller substantially counterbalances that developed by the first- and second-stage impellers.

Other features include:

Auxiliary motor-driven oil pump provides pressure in bearings and shaft seal before starting and stopping.

Wheels are cast, rather than fabricated, for shaping to proper hydraulic design.

Write us for Bulletin C-1100-B14, giving further information. *Worthington Pump and Machinery Corporation, Harrison, N. J. Specialists in air conditioning and refrigeration for more than 50 years.*

WORTHINGTON

Air Conditioning and Refrigeration

Worthington at Firestone

The Research Laboratory in the huge Firestone Tire and Rubber Company at Akron, Ohio, is air-conditioned by Worthington equipment.

Windowless Store—Worthington Air

A 540-ton Worthington Centrifugal Refrigeration Machine, mounted on a structural steel base in a rooftop penthouse, provides year-round air conditioning for Burdine's Department Store at Fort Lauderdale, Florida.

Balanced Air—For Small or Large Installation

Whether it's a 540-ton centrifugal machine for a big building like Burdine's, or a 3-ton packaged unit for a corner drug store, the same fact holds true. Because Worthington makes *all* the vital "innards" of air conditioning and refrigeration systems, the customer gets a *completely-integrated*—not just *assembled*—system. And that means more efficient, more economical operation—*more worth in Worthington.* See your nearby Worthington distributor (in the Classified Telephone Book) for details. A.8.32

(Continued from page 206)

signed for better visibility and to enhance the appearance. Frank Adam Electric Co., P.O. Box 357, St. Louis, Mo.

STEEL GARAGE DOOR

Designed for 16 by 7 ft. openings is the new Strand, all-steel, double garage door. This door is of the overhead, receding (track) type. It is made of sheet steel that has been hot galvanized and annealed for rust protection and to provide a smooth, uniformly coated surface and a clinging base for paint, without the need for a special priming coat. Strand Building Products, Dept. P-112, 1710 Buhl Bldg., Detroit 26, Mich.

FIRE ALARM SYSTEM

An outstanding feature of the *Type SA Fire Alarm System* is the method of adjusting the signal transmission speed to match the rhythm of marching feet. The tripping of a fire alarm box sets the coding mechanism on the control panel in operation and the code is repeated four times on the audible signals of the system. The transmission speed adjustment is said to be of especial value in school use where the code speed may be set to form a natural cadence for children as they march from a building. Such a cadence is reported to prevent a panic while the building is cleared rapidly and efficiently.

The system consists of break-glass fire alarm boxes, fire alarm signals and a control panel. Reliability of operation is claimed through the use of electrical supervision of all signals, boxes, relay windings, resistance units and the motor used to drive the coding mechanism. Such supervision is said to insure the sounding of a "trouble" bell in the event of circuit difficulties which might cause the system to be inoperative.

An optional feature of the SA System is "double supervision" which not only affords the user of the system with an audible indication of circuit trouble, but also provides an alarm in event of trouble in the supervisory source of power.

The fire alarm is available for operation on 125 volts or less, a-c or d-c. The Autocall Co., Shelby, Ohio.

WAX FINISH STAIN

A new interior woodwork stain is said to set up quickly and give a soft, lustrous wax finish in one application.

According to the manufacturer, this new stain penetrates deeply, enriches color, grain and texture and provides a wear-resistant finish that is easily kept clean.

The stain comes in several light shades including white, ivory and two shades of gray which can be used for producing the blonde effect popular in contemporary interior design; it is also offered in darker shades such as walnut, maple and redwood. Samuel Cabot, Inc., 17 Oliver Bldg., Boston 9, Mass.

WHITEPRINTER

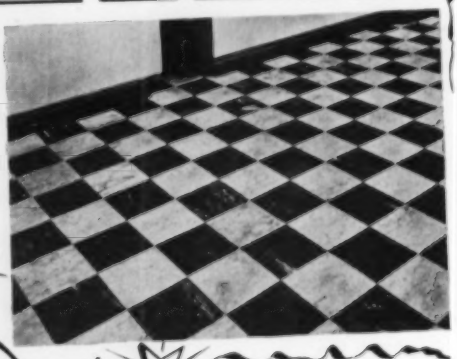
The new *Bruning Model 21 BW Whiteprinter* is described as being capable of producing more than 3000 8½ by 11 in. whiteprints per day with only one operator required. The Model 21 requires no plumbing connections or exhaust ducts — the unit can be installed anywhere in plant or office where electric outlets are available.

Continuous in operation, the whiteprinter exposes and develops cut sheets or roll stock up to 42 in. in width and in any length. Printing speeds range from 6 in. to 4 ft. per minute depending on the transparency of the original.

The developing unit is said to employ a new principle — grooved dual application developer rolls, which, with the aid of a third roll, apply a minute film of de-

(Continued on page 210)

THE SENSATION IN FLOORS!
TAILORIZED FLOORS BY FREMONT...
...floors that are stylized to meet every preference... an endless variety of beautiful patterns to match every situation. Every installation can be different.



FREMONT RUBBER TILE
AFFORDS ADVANTAGES NOT TO BE HAD IN ANY OTHER!

● DISTINCTIVE, LASTING BEAUTY
Colors go all the way through the tile, can't show wear. Non-fading. Loveliness to be admired throughout the years.

● EASE OF CLEANING
Sweeping or light mopping keeps it spotlessly clean, looking like new.

● SOUND CONDITIONING
Suppresses the sound of noisy, irritating, distracting footsteps.

● COMFORT UNDERFOOT
Cushions every step, lessens fatigue.

● RESISTANCE TO WEAR
Lasts practically forever. Withstands heaviest traffic, denting, scuffing. Burning cigarettes leave no permanent blemish. Grease-resistant.

● SAFETY UNDERFOOT
Great non-slip properties.

● UTMOST SANITATION
No pores to hold dirt.

● VARIETY OF RICH COLORS
Eleven solid and marbleized combinations.

● EASE OF APPLICATION
Lies flat. Cut accurately. Uniform thickness.

FLOORS BY FREMONT ARE FLOORS OF BEAUTY
FREMONT Rubber TILE

It is easy to select or originate a pattern which takes into consideration the elements of room size, location, temperature, lighting, traffic, furnishings, business aims and desired psychological effects.
For still greater flexibility in designing patterns
—FREMONT DUO-CUT TILE—
9" x 9" tile die cut so that the center may be removed and a 6" x 6" tile of another color inserted
WRITE FOR FREE DESCRIPTIVE LITERATURE TODAY
FREMONT RUBBER COMPANY
115 McPherson Highway, Fremont, Ohio

In Shreveport, Louisiana ...

5 DIFFERENT ARCHITECTS CHOOSE

ZONOLITE* VERMICULITE CONCRETE ROOFS

FOR INSULATING 5 NEW SCHOOLS

Roof decks that combine structural strength with thermal insulating efficiency are being designed by leading architects in all parts of the country. In Shreveport, La., alone, five different architects specify Zonolite Vermiculite Concrete for five different schools. Here's Why!

LOW COST—No additional insulation is needed on a Zonolite roof deck.

PERMANENT—Made by mixing Portland cement and Zonolite Brand Vermiculite Aggregate, a rotproof, verminproof mineral.

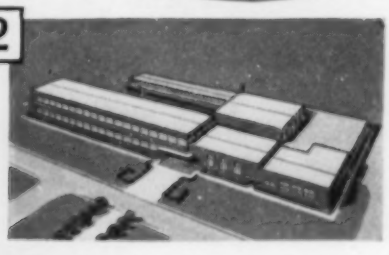
LIGHTWEIGHT—Zonolite Aggregate weighs as little as 6 lbs. per cubic foot, compared to 100 lbs. for sand.

FIREPROOF and FIRESAFE—High degree of thermal insulation blocks passage of heat. Won't burn—fusion point of vermiculite is 2500°F.

and here's how:

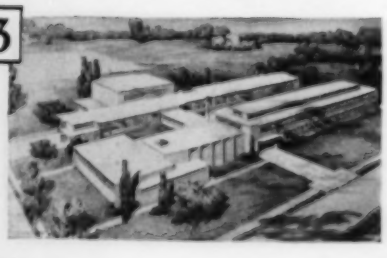
Fast, economical applications of Zonolite structural concrete roofs may be made in a variety of ways. Pour it over paper-backed welded wire mesh—here no additional reinforcing is necessary, no troweling or tamping required, just screed to level. Or pour Zonolite insulating concrete over ribbed metal lath, over fiber, asbestos cement, or gypsum board forms. Zonolite concrete may also be pre-cast into slabs, easy to handle because they're so light in weight.

Zonolite concrete structural decks in place weigh about one-fifth as much as ordinary concrete, permitting great economies in the use of structural steel. Sloping for drainage is easily accomplished; cants, crickets and saddles easily formed. Provides the ideal surface for built-up roofing.

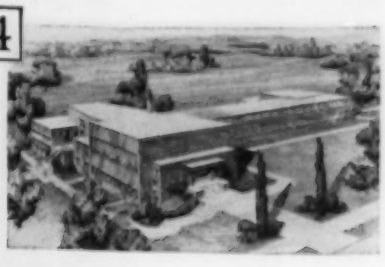


1
NEW NEGRO HIGH SCHOOL Shreveport, La. About 132,000 square feet of floor area. J. A. Harper, Contractor, Crowville, La. Van Os & Flaxman, Architects, Shreveport, La.

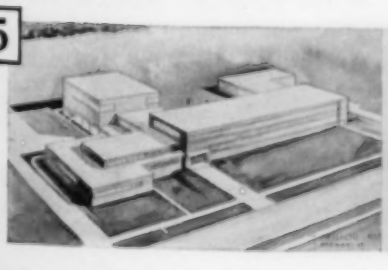
2
BROADMOOR JUNIOR HIGH SCHOOL, Shreveport, La. McClenaghan & Barr, Architects, Southern Builders, Inc., Contractors, Shreveport, La. Approximate floor area 90,000 square feet.



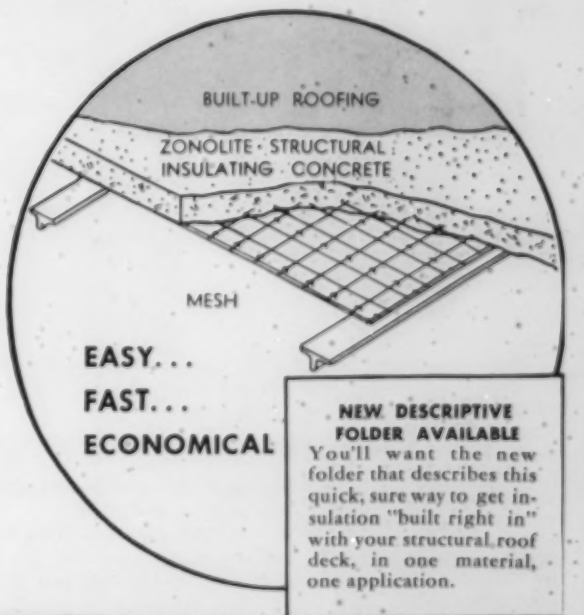
3
CEDAR GROVE JUNIOR HIGH SCHOOL, Shreveport, La. Floor area, 85,000 square feet. Wm. B. Wiener, Architect, Shreveport, La. Nathan Wohlfield, Contractor, Dallas, Texas.



4
JUNIOR HIGH SCHOOL BUILDING, Lakeshore Drive, Shreveport, La. J. Cheshire Peyton, Architect, Harry Bosworth, Associate, Seth E. Giem & Associates, General Contractors, Jackson, Miss. Approximate floor area 90,000 square feet.



5
JUNIOR HIGH SCHOOL BUILDING, for Caddo Parish School Board, Shreveport, La. Walker & Walker and Associates, Shreveport, La. Roof area, 65,000 square feet.



NEW DESCRIPTIVE FOLDER AVAILABLE
You'll want the new folder that describes this quick, sure way to get insulation "built right in" with your structural roof deck, in one material, one application.

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City ..... Zone... State .....

Please check:
Architect . . Engineer . . Draftsman . . Contractor . . .

(*Continued from page 208*)

veloper solution to both sides of the medium to assure proper chemical balance of the developer solution and flat, ready-to-use whiteprints. Developing speed is 10 ft. per minute, far enough in excess of the speed of the printing unit to enable the operator to coordinate the exposing and developing processes. Black, blue, red or brown lines can be printed on white backgrounds. Green, pink or yellow tinted papers can be used on which can be developed black, blue, red or brown lines. Charles Bruning Co., Inc., 4754–22 Montrose Ave., Chicago 41, Ill.

AUTOMATIC ELECTRIC RANGE

Pushbutton controls have recently been adapted to a Hotpoint electric range to identify heat settings of the surface units and the oven. The pushbutton range is now being produced in two models, the single oven RC-11 and the double-oven RD-5.

Color has been uniquely used to identify the various heat positions. Instead of cooking by the word guides "high", "second," "third," "low" and "warm," the homemaker now follows red, yellow, violet, green and blue signals.

The pushbutton control panel is located on a high backsplasher with lighted buttons fully visible above utensils on the surface of the range. The backsplasher can be tilted forward for servicing of all controls, and in this position power is automatically cut off. The oven and surface units can be serviced from the front of the range, a feature designed to permit permanency in kitchen installations.

The entire cooking surface of the range is illuminated by a 36-in. fluorescent lamp located in the backsplasher. Other highlights are the raisable thrift cooker unit, removable drip trays under the *Calrod* surface units, more storage space and a new timer clock. Hotpoint Inc., 5600 W. Taylor St., Chicago 44, Ill.

SOUND INSULATION

Fiberglas blankets, composed of superfine glass fibers bonded with a thermosetting resin, can be used for quieting self-contained air conditioning units. Installed in the interior of a unit and its adjacent plenum chamber, the blankets help absorb sound waves before they reach the ducts.

The blankets do not burn. Under conditions of extreme humidity, moisture absorption of fibers is said to be less than one per cent by weight. The blankets are claimed to have high thermal efficiency, and their use is reported to reduce condensation on cabinet surfaces.

Special adhesives are used to hold the blankets securely to practically any surface. Owens-Corning Fiberglas Corp., 16 E. 56th St., New York 22.

AIR CONDITIONER

The *Refrigerated Kooleraire*, a central station "packaged" air conditioning unit, has recently been improved to include: a more attractive, streamlined design; flush-type cam locks to replace projecting latches; heavier gage steel than used formerly; and more panels provided for easier accessibility.

Factory-engineered, assembled and tested, the Kooleraire cools, dehumidifies, circulates and ventilates the air. Available in 9 sizes, ranging in capacities from 3 to 40 tons, this three-in-one unit houses: (1) the refrigeration compressor section; (2) the air cooling, dehumidifying and circulating section; and (3) the evaporative condenser section. United States Air Conditioning Corp., 3317 Como Ave. S. E., Minneapolis 14, Minn.

MASONRY COATER

A new full rubber base coating, *Rubber-Coat Porous Masonry Coater* is offered

(*Continued on page 212*)

Because school lighting is specialized lighting, it requires a specialized fluorescent fixture. To fill the need for light that's right for learning, LPI designers produced the **LPI EDUCATOR.**

In addition to providing scientifically correct, reliable illumination, the Educator has the traditional LPI features of easy installation and easy maintenance, beauty and versatility. It's finished in LPI's exclusive "Klasium" white, the enamel that's *bonded* to the metal.

An LPI representative near you will be glad to tell you more about this fine fixture, or you may write for Educator Bulletin No. 4150.

The Educator is priced for school budgets and sold through leading electrical wholesalers.

LPI

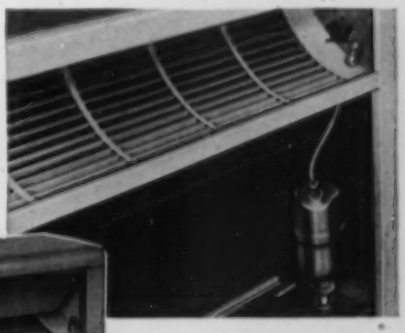
LIGHTING PRODUCTS INC.
HIGHLAND PARK, ILLINOIS

There's more than beauty in the NEW

Modine Convector

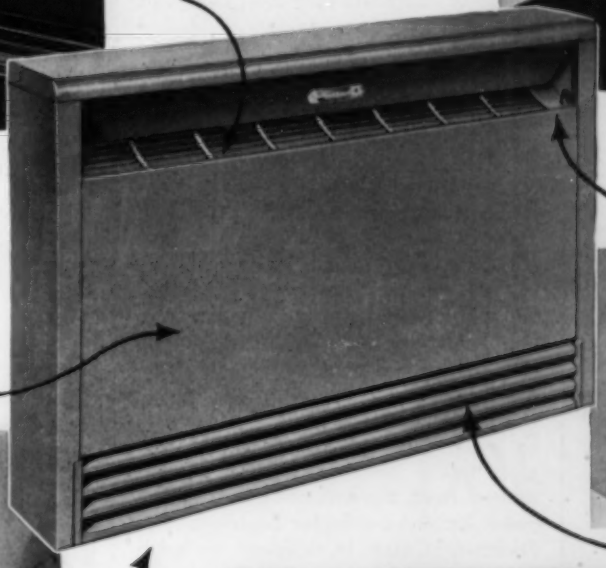
Important new features simplify installation . . . provide more convenient operation and control . . . assure superb heating comfort.

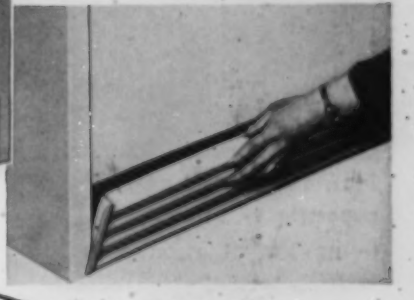
NEW DUAL-PURPOSE DAMPER! A touch of the hand operates the self-positioning damper for convenient temperature control. When closed, damper conceals unique outlet grille . . . blends enclosure into adjoining wall.



NEW CONVENIENT AIR VENTING! Out of sight, yet instantly accessible, air vent can be rigidly secured to curved outlet grille as illustrated whenever convectors are installed on hot water system.

NEW 5-SECOND REMOVABLE FRONT! For easier installation and cleaning, effortless lifting action quickly removes entire front panel. No need to bother with screws, catches or tools. Panel is easy to replace too.





NEW SNAP-IN GRILLE! Completes striking appearance of Modine Convector. An optional feature you can add now or later. Snaps in or out of place without tools. Affords quick access for cleaning beneath cabinet.

NEW VERSATILE ENCLOSURE DESIGN! Designed for modern interiors, type F Convector (shown with damper closed) is ideal for recessing — either partially or fully (at right) or for exposed installation against wall.

Look, compare, consider . . . see for yourself why Modine is top choice in convector radiation! Note these outstanding features: Modine Convectors are functionally styled to blend perfectly with your up-to-the-minute ideas of interior design. What's more, Modine gives you completely new installation, control and maintenance features that make it really big news in modern radiation design. Available in four beautiful cabinet styles in a wide range of modular sizes. You'll want Modine . . . for the modern home, apartment, school, office, hospital. Call your Modine Representative listed in the "Where-to-Buy-It" section of your phone book . . . or write direct. Modine Mfg. Co., 1510 Dekoven Ave., Racine, Wisconsin.

Modine Convector Radiation

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ONAN EMERGENCY ELECTRIC POWER

MODEL 10EL
10,000 WATTS

Onan Emergency Electric Plants provide power for all essential needs . . .

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* When storms, floods or breakdowns interrupt commercial power, Onan Standby Plants start automatically and take over the power load within seconds, stop when power is restored. Operating and maintenance costs are negligible. Widely used in hospitals and other institutions, radio stations, hatcheries, theaters, industrial plants . . . wherever power interruptions would be dangerous and costly. Available from 1000 to 35,000 watts.

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Send coupon below for folder on Onan Standby Plants. It will help you specify the right size plant and the necessary accessories. If you have an unusual problem write our engineering department.

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City.....State.....

ONAN STANDBY POWER

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 210*)

to fill, seal, prime and finish all types of porous masonry including cinder, cement blocks and stucco. The coating is said to be a quick-drying, easily brushed, cream-like consistency paint that is highly resistant to the passage of moisture. It is also described as an excellent finish itself for interior use or to replace cement grout on exterior work. Among other outstanding qualities claimed by the manufacturer are its all-in-one waterproofing and dampproofing action and rubber characteristics such as alkali resistance and toughness. The Wilbur & Williams Co., Greenleaf and Leon Sts., Boston 15, Mass.

DIELECTRIC FITTING

The Hotstream *Dielectric Union* has been engineered to increase the life of plumbing systems by eliminating electrolytic corrosion where ferrous and non-ferrous metals are joined. It is said to prevent the damaging effect of electrolysis upon galvanized storage tanks and nipples when connected with copper plumbing. The *Dielectric Union* consists of two specially designed flanges — one made of iron and the other of bronze. Both parts are insulated from each other by a carefully selected non-conductor gasket. The connecting bolts are insulated from the bronze section of the union by non-conductor bushings. The *Dielectric Union* is designed to completely break the electrical circuit between the galvanized iron and the copper, and therefore prevents electrolysis. The Hotstream Heater Co., 2363 E. 69th St., Cleveland 4, Ohio.

SPRINKLER SWITCH

A device that automatically turns sprinklers on and off at regular, timed intervals should be a boon to lawn-owners, lawn maintenance men, commercial farmers and others whose business requires large-scale watering operations. Utilizing magnetic solenoid valves in the water pipes, it is said to be suitable for use with all types of overhead or concealed irrigation systems. According to the manufacturer, it provides for sprinkling control both in the day and all during the night when water pressure is greatest and maximum soil saturation can be achieved. The switch is available in any number of circuits from 2 to 20, and also has a special master switch to discontinue operation during rainy weather. The average sprinkling time lasts from 12 to 15 minutes on each branch. Tork Clock Co., Mount Vernon, N. Y.

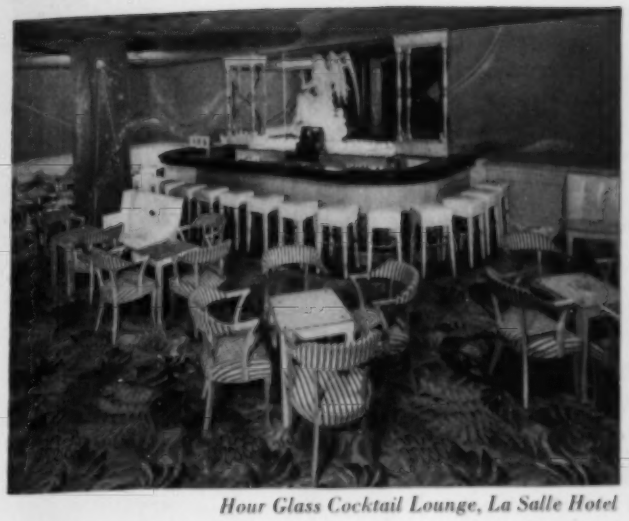
- SMOOTH AS SILK
- ALL 17 DEGREES — 6B TO 9H — UNVARYING AS THE STARS
- ARTISTS PREFER **KOH-I-NOOR** FOR ALL DRAWN WORK — LIGHT, HEAVY, THIN, THICK, TONES, AREAS, SHADING!
- AND THERE IS ECONOMY IN **KOH-I-NOOR** SUPER-QUALITY. NO GRIT. LESS BREAKAGE. LESS TIME-LOSS.
- YOUR DEALER HAS

Koh-i-noor

KOH-I-NOOR

The RIGHT pencil for the RIGHT job

KOH-I-NOOR PENCIL COMPANY, INC., BLOOMSBURY, NEW JERSEY



Hour Glass Cocktail Lounge, La Salle Hotel

Officers' Lounge, Hotel Knickerbocker

Walk into these fine Chicago hotels— And you'll walk on Bigelow Carpets

BIGELOW WEAVERS

Here are four scenes in one city. Four important hotels all carpeted with Bigelow's famous Hartford-Saxony.

And in city after city, you'll find the same story. For smart hotel managers . . . decorators . . . architects . . . all realize how superbly this carpet pays its own way.

Pays off in year-in, year-out wear because of its exceptionally rugged construction. Pays off in distinctive appearance, because it's always custom-created as to design and color.

What are your carpet needs? Custom-made styles, or a choice of swatchbook beauties? Any questions about installations? Bigelow's prepared to answer them readily.

See Bigelow's Carpet Counsel for sound, expert advice. 25 Carpet Counsel offices are at your service. One of them is near *you.*

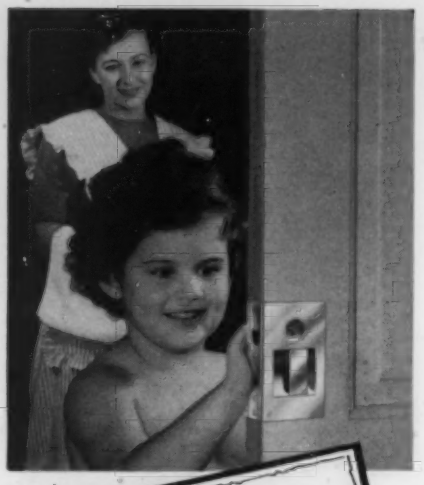
Bigelow

Rugs and Carpets

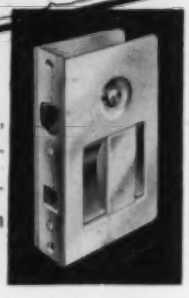
Beauty you can see . . . quality you can trust . . . since 1825

Walnut Room, Bismark Hotel

Cherub Room, Hotel Belmont



THE NEW ADJUSTABLE
RITE-LOCK
FOR SLIDING DOORS



- For Entrance Doors, Bath and Inside Sets.
- Solid Brass Exterior.
- Three Escutcheon Types.

RITE-LOCK adds distinction and convenience to today's sliding doors. It's new, compact, trouble-proof...fits almost any thickness of door. The latching action is positive and releases with a natural sliding movement of the bar in the cup. For convenience and economy a finger pull is formed in the face plate. Look at these advantages:

- ★ *Adjustable in width from 1-1/8" to 1-15/16"*
- ★ *Unit-type requires only a 3-1/2" x 2-5/8" notch*
- ★ *Adaptable to right or left hand doors*
- ★ *Outer case measures only 4-1/2" x 2-7/8"*
- ★ *Pin-tumbler 3/4" diameter cylinder available*

Ask your Hardware Consultant or write us for complete details.

a r
ADAMS-RITE
MANUFACTURING COMPANY
540 W. Chevy Chase Dr., Glendale 4, Calif.

(*Continued from page 154*)

sis shows where economies can be effected through the proper use of different lumber grades. 8 pp., illus. West Coast Lumbermen's Ass'n., 1410 S. W. Morrison St., Portland 5, Ore.

Casement Windows

Collection of Ideas, Pella Casement Windows. Presented in this booklet are a large number of ideas on the use and grouping of casement windows. Architectural renderings show both interior and exterior appearance of houses where these windows have been used in a variety of applications including picture windows. Sketches illustrate stock units, wall construction used with the windows and special window features. 24 pp., illus. Rolscreen Co., Pella, Iowa.*

Timber Service

For Users of Wood and Forest Products. Outlines the technical services available to architects and engineers from the Timber Engineering Co., covering such items as: timber engineering and designing, timber and forest products research, product development and wood chemistry. The bulletin has been especially prepared for young men who have entered industry since the war. 6 pp., illus., Timber Engineering Co., 1319 18th St., N. W., Washington 6, D. C.

Schoolroom Painting

How to Decorate Classrooms in the Harmon Technique. Booklet designed to help architects select physiologically and psychologically tested classroom color combinations according to the method developed in the Texas school system by Dr. Darell Boyd Harmon.

In five clearly separated steps, the booklet explains the procedure used in arriving at ten possible color combinations for child-centered classrooms, depending on the orientation and function of the rooms.

Also contained are complete formulas and painting specifications for each color combination, showing how the colors are mixed and where they are applied. 8 pp., illus., Luminall Paints, 3617 South May St., Chicago 9, Ill.

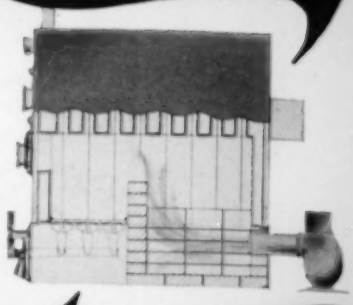
Acoustical Ceiling

Fibertone, the Quiet Ceiling with One Hundred Thousand Noise Traps. Describes what Fibertone is and tells how this acoustical material quiets noise economically. Application practices are explained and suggestions given as to where the material can be advantageously used.

Pattern possibilities are shown and

(*Continued on page 216*)

FUEL SHORTAGES
or POWER FAILURES



. . . mean nothing to this new boiler!

Presenting
The SMITH-MILLS RELIANCE for larger homes

Even the best automatically-fired boiler is subject to power failures, strikes, or curtailed fuel delivery or supply. Acknowledging this, H. B. Smith has designed a boiler for both normal and emergency operation. *If for any reason either fuel supply or electric power fails, the Smith-Mills RELIANCE still maintains heat in the home.*

An emergency grate makes this possible. With it, a *coal or wood* fire can be maintained by hand firing to give ample heat and domestic hot water as long as they are needed. Yet this arrangement in no way lowers boiler efficiency during automatic firing.

• • •

THE SMITH-MILLS RELIANCE IS NOT FOR *EVERY* HOME. But it is bound to have wide acceptance among those home owners who can afford the utmost in convenience and reliability. This in turn means bigger profits for the contractor, unequalled client satisfaction for the architect.

H. B. Smith
CAST-IRON BOILERS
THE H. B. SMITH CO., INC.
67 Main Street
Westfield, Mass.

Offices and Representatives in Principal Cities

For the first time ever!

NOW YOU CAN GET ALL THE G-E FLUORESCENT LAMPS YOU WANT!

NOW'S THE TIME to take full advantage of all the design possibilities of fluorescent lamps. You no longer need worry about availability, because now you can get all the G-E fluorescent lamps you want!

FOR THE FIRST TIME since General Electric introduced this sensational light source ten years ago, production has at last caught up with the tremendous demand.

NEW FACTORIES now in operation are turning out G-E fluorescent lamps by the millions—all manufactured to those standards of quality that have made G.E. the first choice of buyers everywhere.

Always recommend lamps with this mark of quality..

G-E LAMPS

GENERAL ELECTRIC

ZINC SERVES YOU

Galvanizing (Zinc coating) insures long-time, low-cost service. For as long as iron or steel is coated with Zinc, it cannot rust. For satisfaction, use galvanized materials. They're "Sealed-in-Zinc" against rust.

ROOFING
SIDING
FENCING
TIME proves galvanized sheets stay stronger longer. Used as roofing and siding, they give buildings the "strength of steel" . . . the rust protection of Zinc. The "Seal of Quality" (above) is your guide to economy in buying galvanized sheets. It means they carry at least 2 oz. of Zinc per sq. ft. Galvanizing also lengthens fence life and service.
RAILROAD
Galvanized products in the railroad industry guard bridges, cars, buildings, etc., against rust.
HEATING—VENTILATION
Strength, workability and resistance to heat as well as rust make galvanized sheets ideal for heating and air-conditioning.

FREE BOOKLETS

Fully illustrated and packed with practical information on galvanized sheets and Metallic Zinc Paint. Send for them, *today!*

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Send me without cost or obligation the illustrated booklets I have checked.
- ☐ Repair Manual on Galvanized Roofing and Siding.
- ☐ Facts about Galvanized Sheets.
- ☐ Use of Metallic Zinc Paint to Protect Metal Surfaces.

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Address _____
Town _____ State _____

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 214*)

erection details included. The booklet concludes with a list of sizes, weights and sound absorption data. 8 pp., illus. Johns-Manville, 22 E. 40th St., New York 16, N. Y.*

Elevators

An Entirely New Concept of Elevatoring. Discusses automatic supervision provided for six basic kinds of traffic flow in *Otis Autronic Elevatoring.* Stresses the flexibility of the system, highlighting the use of electronics. 12 pp., illus. Otis Elevator Co. 260 11th Ave., New York 1, N. Y.*

Garbage Disposer

Goodbye Garbage Can. Shows how disposer grinds wastes into fine particles and flushes them down drain in a fluid-like consistency. Commonly asked questions are answered. Specifications are included. 8 pp., illus. Mullins Mfg. Corp., Warren, Ohio.*

Steel Casements

Residence Steel Casements. Residence steel casements for homes of various types, steel basement windows and utility windows are described. Detail drawings of various installations and complete specifications are included. 12 pp., illus. Detroit Steel Products Co., 3113 Griffin St., Detroit 11, Mich.*

Building Materials, Equipment

Building Products Information Bulletin No. 52. Lists large number of recent improvements in building materials with products ranging from a safety detention screen for asylums to a pressure-treated, impregnated lumber for athletic stands and stadiums. Some of the groups included are: doors and windows, flooring, roof construction, tile, plumbing, shelving. The Producers Council, Inc., 815 15th St., N. W., Washington 5, D. C.

Wood Flooring

Connor's Laytite. Describes advantages of Laytite Floor together with installation and lumber grading procedure. A table is included for determining the footage of flooring required for different wood sizes. Space is devoted to methods of finishing a maple floor. 15 pp. The Connor Lumber and Land Co., Box 112, Marshfield, Wis.

Store Modernization

Store Modernization Guide. A compilation of articles dealing with new store fronts, floor plans, fixtures, floor coverings, lighting, air conditioning, traffic control, parking, space utilization, etc.

(*Continued on page 218*)

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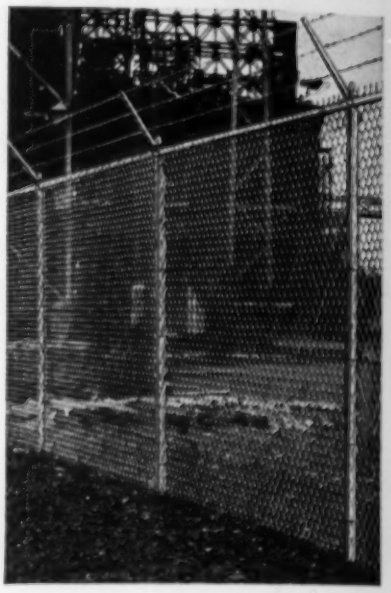

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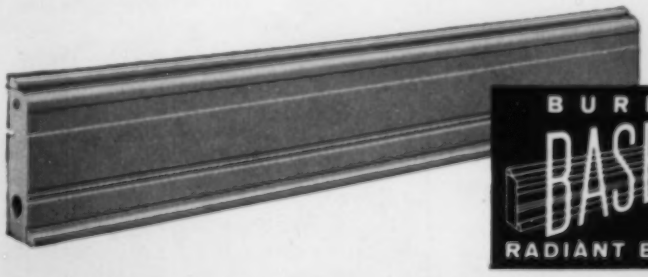

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ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(*Continued from page 216*)

The guide describes special uses of glass blocks, ventilation, soundproofing, shelves, conveyer belts and many other items used for remodeling the store. 73 pp., illus. National Ass'n. of Retail Grocers, 360 N. Michigan Ave., Chicago, Ill.

Kitchen Equipment

Dream Kitchen for a Song. Illustrates entire line of *Kitchenaider* cabinet sinks, base and wall cabinets and accessories, and the *Mullinaider* kitchen waste disposer. The booklet also describes the features of the equipment and the straight line dishwashing method in a double bowl cabinet sink. 20 pp., illus. Mullins Mfg. Corp., Warren, Ohio.*

Unit Heaters

Pittsburgh Gas Unit Heaters, Series "C." Folder describing gas unit heaters that make use of cast iron heat exchangers. Safety features and applications are outlined. Specifications for six sizes, with output ranging from 68,000 to 172,000 Btu per hr. are included. 4 pp., illus. Automatic Gas Equipment Co., 301 Brushton Ave., Pittsburgh 21, Pa.

Concrete Floors

Wearproof and Dustproof Concrete Floors with Lapidolith. Outlined in this folder is a method to prevent concrete floors from becoming rough and rutted.

Cross-section drawings show how Lapidolith penetrates deep into concrete to produce a surface said to be close-grained, granite hard with a vitreous topping that stands up under heavy traffic, prevents formation of concrete dust, and protects floors against the deteriorating effects of industrial oils and chemicals. 6 pp., illus. L. Sonneborn Sons, Inc., 88 Lexington Ave., New York 16, N. Y.*

LITERATURE REQUESTED

The following individuals and firms request manufacturers' literature:

Leonard Heiferling, Student, 960 Avenue St. John, New York 55, N. Y.

Maurice C. Johansen, Student, 7296 Lyndover Place, Maplewood 17, Missouri.

Stanley T. Lewis, Student, 4328 East-West Highway, Bethesda, Maryland.

U. S. Engineering Co., 1335 East Passyunk Ave., Philadelphia 47, Pa.

Van Loos Decoradores, Caixa Postal 1499, Rio de Janeiro, Brazil.

Edmund D. Winstead, Designer, 232 W. University Ave., DeLand, Fla.

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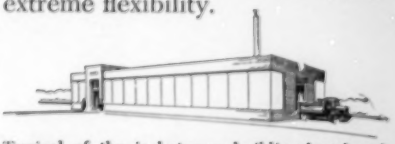

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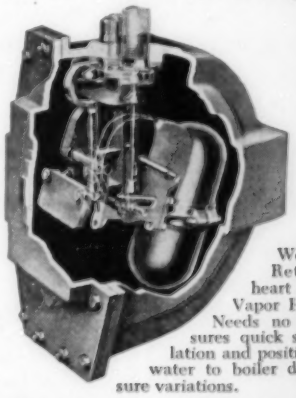

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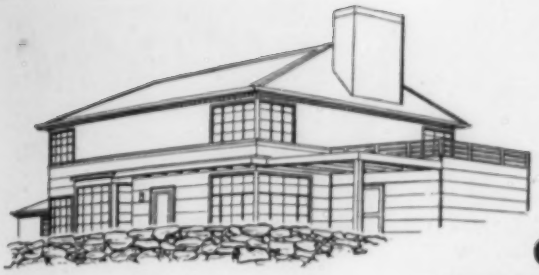

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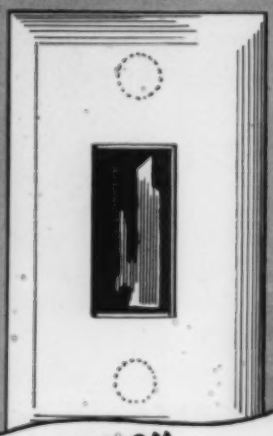

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REQUIRED READING

(*Continued from page 30*)

somewhat briefer treatment, though most of the problems confronted in site selection, layout technique, orientation, spacing, building codes and so on, are discussed and principal points are made clear by diagrams.

The book is abundantly illustrated throughout, with plans, elevations, layout schemes and diagrams. Four appendices are added for good measure, containing some of the most interesting material in the volume: detailed discussions of square versus row patterns, double building frontages, small house layout, and "A Tale of Two Neighborhoods."

TOWN AND COUNTRY PLANNING

The Planner's Notebook: A Compendium of Information on Town and Country Planning and Related Subjects. Edited by H. Myles Wright, M.A., A.R.I.B.A. The Architectural Press (13 Queen Anne's Gate, London, S.W. 1, Eng.), 1948. 6 by 9 in. xx + 390 pp. 30s.

It is good news for all concerned when a well edited reference is brought out dealing with a broad, complicated and largely uncatalogued subject. As such, THE PLANNER'S NOTEBOOK is a welcome and valuable addition to the roster of publications on city and country planning — welcome and valuable to planners in this country as well as in England, even though it deals exclusively with what is going on in the British Isles.

Containing 272 excerpts from or summaries of books and articles on planning, sensibly arranged alphabetically, the volume covers a wide range of subjects from advertising to zoning. Tables and charts abound, and a meticulous index makes it easy for the reader to find whatever is of immediate interest to him.

NEW EDITIONS

PLYWOOD

Modern Plywood. By Thomas D. Perry. 2nd ed. Pitman Publishing Corp. (2 W. 45th St., New York 19), 1948. 6¼ by 9¼ in. xvi + 458 pp., illus. $6.00.

This new edition of MODERN PLYWOOD contains all the original material with many new subjects added and others enlarged. The entire text, furthermore, has been practically rewritten to remove the emphasis of the volume from the military, where it was perforce in the wartime first edition, to the commercial uses of plywood.

All the tremendous strides made by the plywood industry during the war

(*Continued on page 222*)

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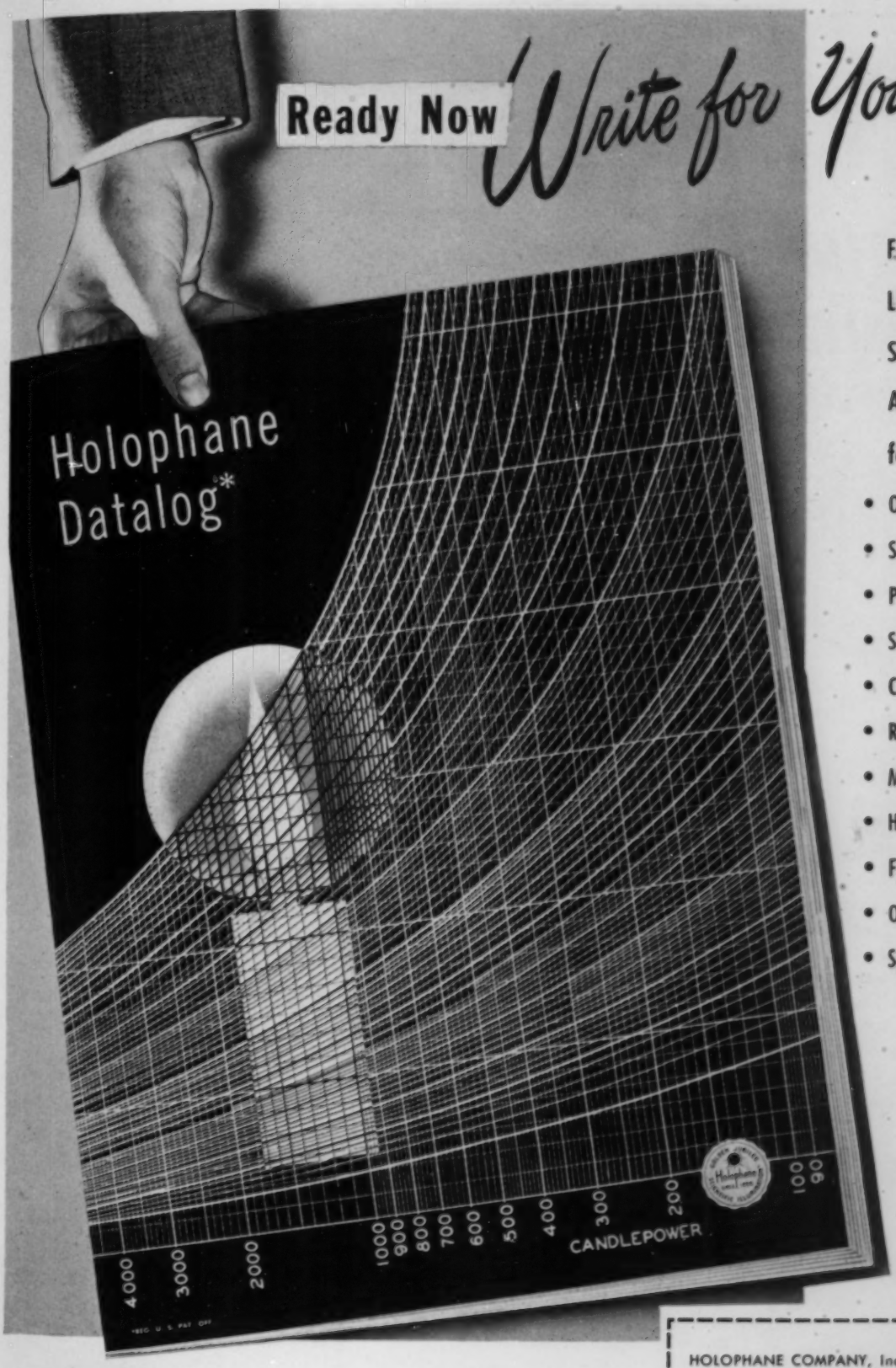

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